

## Developing a Program of “Public Dental Health” Within a Subject Oriented Undergraduate Dental Curriculum

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### Abstract

**Purpose:** To present the development of the concept of professional education of undergraduate dental students and the process of developing and introducing the subjects of social medicine, medical ethics and public dental health, in the context of health reforms in Bulgaria and the process of harmonization of dental education in Europe.

**Material and Methods:** Documentary analysis reflecting the changes in the content of the disciplines being taught and the included topics according to the development of the mission and objectives of the undergraduate dental curriculum was applied.

**Results:** The data collected consist of the following: 1. Overview of the major periods of development of the profession of “doctor of dental medicine” in Bulgaria and the periods of implementation and development of the program; 2. Development of the concept and the introduction of the disciplines in the overall program as well as the change in volume and content of the courses; 3. Essential aspects of continuity and innovation demonstrated during the transition from a “Scientific, Organizational and Methodical Section” to the “Department of Dental Public Health”; 4. Expression of gratitude for the cooperation in connection with the introduction and upgrading of the programs; 5. Prospective fields of progress and improvement of teaching of public health courses.

**Conclusion:** The program of public dental health was introduced almost simultaneously with the restoration of the private sector in Bulgaria. As a subject of the dental curriculum it covers 4 - 5 main domains – social medicine, medical ethics, dental health, dental profession, dental practice, research methods. The stress should be put now on implementing of the problem-oriented learning-teaching methods and the integration of the theoretical teaching into clinical training.

**Keywords:** *Teaching/Learning; Social Medicine; Medical Ethics; Health Care Reform; Dental Education*

### Introduction

Historically, dentistry is associated with human medicine, having same fully comparable traits: subject – individual and public health-care provision; social significance– the role of medicine and dentistry is perceived as very important both by individuals and communities; moral standards’ imperative –physicians and dentists demonstrate high level of responsibility in front of people and society [1]. Therefore it could be expected that medical and dental education has similar traits too. However, medicine and dentistry have also their specific particularities, resulting from the way the professions are organized and proceed within the social and professional environment [2].

Medical profession differentiated earlier than the dental profession, therefore, dental education originated essentially from medical education. Actually, dental education became a true academic education as it encompassed medical teaching [3]. The general goals and tasks of medical and dental education are similar, or very alike in most aspects, but two curricula differ in the component relevant to the development of some educational courses and programs responsible for the professionalization of the medical doctors and the doctors of dental medicine [4,5].

Academic dental education, compared with medical education, has a shorter history. Even shorter is the file of the social and behavioural sciences involvement in the course of dental medicine. Fundamental and clinical disciplines such as anatomy and surgery constituted a major part of the educational programs in medicine centuries ago, while the subjects “social medicine” and “public health” were included in the complex of educational disciplines for humane doctors a few centuries later, and for the doctors of dental medicine even later – it was only in the 20<sup>th</sup> century [6,7].

The first dental school was open in Baltimore in 1840, but the dental education established an academic curriculum in 1926, when it got the three main criteria recognized as features of the academic professional higher education. Gies' report from 1926 stated that the dental education has to shift from apprenticeship and introduce medical and scientifically based approaches to the dental curriculum [3]. These criteria are more or less still valid, although the dental education since 1926 till now accomplished a great progress in conceptual, methodical and coursework terms.

In many countries of the EU and North America the courses in “Social medicine”, “Medical ethics”, and “Public dental health”, “Practice management”, and other relevant disciplines, are taught by a defined department, or/and other departments within the dental schools. In dental schools without specific department the programs are decentralized. The courses of “Oral health promotion”, “Dental diseases prevention”, “Organization of the public health service” or similar, are usually taught by the departments of Pediatric dentistry and community oral health, while other courses such as “Dental practice management”, “Team work”, “Dental ergonomics”, “Ethics and law”, etc. – by the departments of Dental health for adults [8,9].

On the other hand, it has to be taken into consideration that, according to the paradigm of “problem-oriented learning”, a sustainable trend is observed to shift from “subject oriented learning” and change the focus from teaching to active learning and intra-institutional cooperation [8,10-12]. Therefore, models of open infrastructures and flexible collaboration, rather than differentiation of rigid departmental organization become common [5,13]. Regarding the teaching of public health issues, both approaches exist in different dental schools. In Bulgaria, the faculty of dental medicine of Sofia is the only one where a program in Dental public health is developed and taught by a defined department, operated as a part of a subject oriented undergraduate curriculum.

The elaboration of an academic program and its integration into the accredited undergraduate dental curriculum was the reason and predisposing condition for the formation of the new department [14,15]. The flexibility and cooperation in upgrading the programs of “Social medicine”, “Medical ethics”, and “Public dental health” were of paramount importance for maintaining dynamics within the subject-oriented dental curriculum. Led by this idea and assisted by our esteemed colleagues from the Medical faculty and from other dental schools of Europe and USA, we have been working on a comprehensive program for dental professionals open for update and fitting with the new learning environment and new learning technologies [16,10-12].

### **Purpose and objectives**

The purpose of this paper is to describe the process of development and improvement of teaching of the disciplines “Social medicine”, “Medical ethics” and “Dental public health”, introduced and taught by the department of “Dental public health” of the Faculty of dental medicine, in the context of socio-economic development and health reforms in Bulgaria, as well as the process of harmonization of dental education in Europe. In connection with that objective the following tasks were performed:

1. Major periods of development and implementation of the courses in “social medicine”, “medical ethics” and “dental public health” in accordance with the periods of development of the dental profession in Bulgaria are defined;
2. The concept of integration of the disciplines taught by the department in the overall undergraduate dental curriculum and the choice of volume and content of the disciplines are presented;
3. The aspects of continuity and innovation during the transition of the structure from the “Methodology of scientific research section”, into the “Social medicine and dental public health” department are discussed;

4. Appreciation for the assistance and cooperation of eminent scientists and institutions during the process of elaboration and implementation of the programs is expressed;
5. The prospective development of the teaching of the courses are outlined.

### Materials and Methods

The documents’ analysis, review of literature and secondary data analyses are applied. A review of the teaching material, its distribution, the sequence of inclusion, are performed in line with the description of the development of the mission and objectives of the educational program for dental practitioners.

### Results and Discussion

#### Development and implementation of the programs in social medicine and dental public health in accordance with the development of the dental profession in Bulgaria

Dental education in Bulgaria, despite the delay of 100 years has an academic character since its inception. At the beginning, (1942) it was taught by a “Department of dentistry” of the Medical faculty of Sofia University “St Kliment Ohridski”. The Faculty of stomatology of Sofia was founded a couple of years later. In 1974 a second Faculty of stomatology [6] was open in Plovdiv. In 2005 – a third one was open in Varna [1,17].

In 1991, half a century after the establishment of a system of dental education in Bulgaria, first steps were undertaken for introduction of the discipline “social medicine and dental public health”(SMDPH) in the undergraduate dental curriculum. The social medicine and public health disciplines taught to dental students and dental practitioners, built up to a large extent, from similar disciplines taught to medical students and medical practitioners. The program was elaborated in cooperation with the department of social medicine of the medical faculty, but gradually, teaching for dentists started to show specificity, in accordance with the specificity of professional dentistry/ dental medicine [4,12,18].

The department of public dental health of the Medical university of Sofia, founded in 1991, is to some extent a pioneer. It started teaching a program before the guidelines for the specialty of dental public health were clearly formulated, and before any social experience of the profession with working in a market environment was recorded (Table 1).

Stage	Period	From Event	To Event	Teaching of social medicine and dental public health
1	1878-1905	The first dental practice was opened	The Odontological society was founded	
2	1910-1944	The Bulgarian dental association was founded	The communist regime took the power	
3	1944-1974	The ownership on private property was banned	The private dental practice was banned	
4	1974-1991	The healthcare system “Semaško” was established	The right to private dental practice was restored	Lecture course in social medicine/social hygiene “pass/fail” control; SMROS”
5	1991-2000	The professional autonomy was restored by law	The radical healthcare system reforms were initiated	“Social medicine and dental public health”(SMDPH) was introduced in the new dental curriculum, lasting 1 semester in 5 <sup>th</sup> year The first textbook in SMDPH was published.

6	2000-2007	The third part payment type “Bismark” was introduced	Bulgaria became a member of the EU	New program in SMDPH is applied in the new dental curriculum comprising 2 courses: in 2 <sup>nd</sup> year (1 semester) “Social medicine and Medical ethics” and in 3 <sup>rd</sup> year (2 semesters) “Dental public health”; Total of 105 +45 classes.
7	2007-2016	Bulgaria is an EU Member.	10 years later: Digitalization of the system management	Module structure of the programs. Precision of topics. New textbooks in Bulgarian Teaching in English Original English textbooks

**Table 1:** Professionalization of the doctors of dental medicine in Bulgaria and teaching social medicine and dental public health to dental students.

It played a “push forward” role on the transformation of the former “stomatology” practiced by employees into “dental medicine”, practiced by a regulated profession [6]. The process of elaboration and adoption of the dental public health program contributed also to the faster implementation of the new dental curriculum.

At the time of the functioning of the system “Semaško” (period 4) only a couple of lectures in social medicine/social hygiene were included in the dental curriculum controlled by pass/fail” oral examination at the end of the semester. The teaching was done by the department of social medicine/social hygiene of the medical faculty. The specialty of social medicine/social hygiene had been acquired only by chief dental officers. During this period a group of scientists was located at the faculty of dental medicine (faculty of stomatology at that time) known as “socio-medical research and organizational section” (SMROS). The team working in this section taught thematic short-term lecture courses for chief dental officers of the regional policlinics.

After 1991 (period 5) an amendment to the people’s healthact was enacted, which removed the ban on private practice. Soon after that act passed, the post of chief dental office in the ministry of health was suspended and the “socio-medical research and organizational section” (SMROS) at the faculty of stomatology was transformed into “department of social medicine and public dental health” (DSMPDH) with first head department - the former chief of the section.

By chance, my academic career started about that time (August 1988), at the eve of the transition period. This fact created for me the opportunity to participate actively in the processes. The highest honour and privilege for me was the task to elaborate the first draft program with the working title “Complex of disciplines relevant to oral health, community health and practice management”. The proposal for including a program of SMDPH was submitted and the new curriculum was a fact in 1991 (Figure 1).

This first attempt to draft a program included the following sections:

1. Organization of health services
2. Prevention and oral health programmes for priority groups of the population
3. Dental practice management
4. Motivating students for continuous improvement.

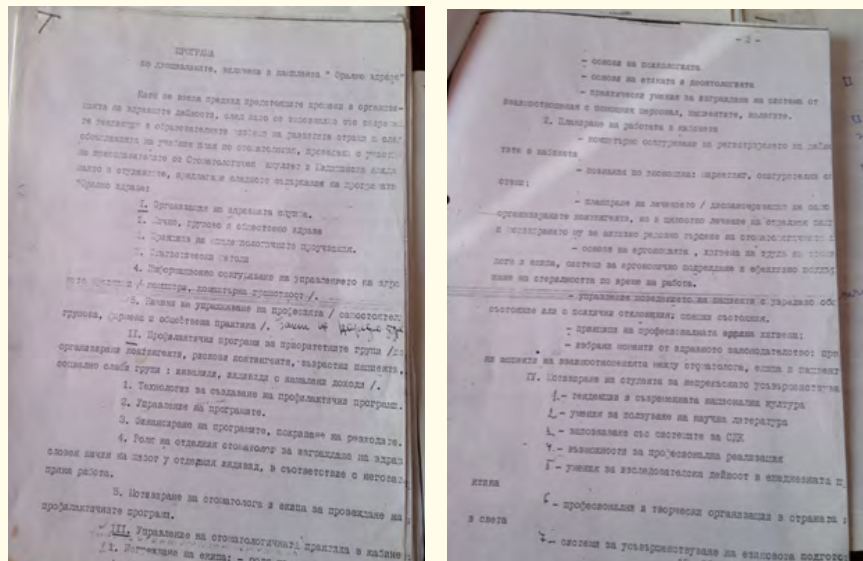


Figure 1: First draft of the program; 13.06.1990. L. Katrova.

Immediately after the new dental curriculum had been enacted, the draft program was extensively discussed and adopted by the newly formed department of “social medicine and public dental health”. The first program comprised 7 lectures and 7 seminars. It began operating during the first semester of the academic year 1991 - 92, for 5<sup>th</sup> year dental students (Figure 2).

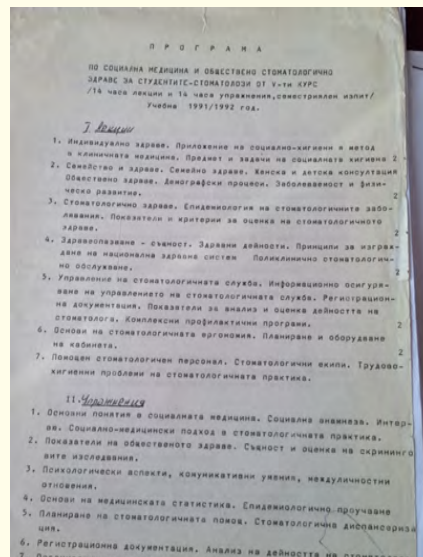


Figure 2: The first programme of “Social medicine and public dental health” (1991-1992).

The first programme of social medicine and public dental health evolved in the period of transition and radical health reforms 1991-2000. Step by step, the number of class hours increased and new themes were introduced, such as “international cooperation”, “health legislation”, “sociological research”, “health promotion and oral health prevention”, “medical ethics” [19,20]. The first textbook entitled “Social medicine and public dental health” was published in 1998 [14].

Between 2000 and 2007 (period 6), the healthcare system shifted from type “Semashko” to type “Bismark”. During the preparatory period before the country become EU member a revised dental curriculum was adopted and the program in social medicine and dental public health was reshaped in accordance with the recommendations for harmonization between member states in the EU [16] and following the Bologna declaration statement. Major enlargement and improvement of the programme taught by the department of public dental health were done. Two courses were added: “social medicine” and “medical ethics”. In addition, the total number of hours increased and some of the titles of the lectures and seminars were reformulated. The programs were reshaped in “modular form”. The material was distributed in two courses: “Social medicine and medical ethics “– for second semester in second year and “Public dental health” –for first and second semesters of the third year dental students, with a total duration of 105 + 45 hours for 3 semesters (Table 2).

	SMME: 4 <sup>th</sup> semester	DPH: 5 <sup>th</sup> semester	DPH- 6 <sup>th</sup> semester
Topics of lectures and seminars	1.Introduction to social medicine 2.Health as a biosocial phenomenon 3.Public health indicators. (demo-graphic indicators, physical development 4.Public health indicators. (morbidity) 5.Introduction to the methodology of scientific research 6.Principles of medical ethics and bioethics 7.Basic moral principles in clinical practice 8. Application of ethical standards in the dental practice <b>a total of:                      15 hours of lectures and 30 hours of seminars</b>	1. History of dentistry 2. Dental Health in the EU 3. International cooperation in health 4. Health care as a social system 5. Legislative basis of public health 6. Dental Health Service in Bulgaria 7. Health management 8. Healthcare financing 9. Management and marketing in the dental practice 10. Dental health 11. Health promotion 12. Evaluation of dental dental health 13. Epidemiology and epidemiological studies 14. Sociological studies	15.Dental Ergonomics 16.Organisation Of The Healing Process 17. Support Staff, Dental Team 18.Infection Control 19.Occupational Hazards 20. Open A New Dental Practice 21. Operation Of A Dental Practice <b>a total of:                      45 hours of lectures and 60 hours of seminars</b>

**Table 2:** Lectures' topics and distribution by semesters in the new program.

Over the last 10 years (period 7) programs improve primarily through covering the entire range of knowledge relevant to the built up of a successful professional career. New textbooks which meet the scientific and methodological requirements in the context of harmonization of dental curricula all over EU were published.





**Figure 3:** Original textbooks containing EU requirements and innovative approaches [11,12,15] English textbooks [13,14,25] Bulgarian textbooks.

**Development of the concept of the inception of disciplines in the overall program as well as the volume and content of the disciplines**

The subject taught by the department of dental public health in 1991 was primarily “hosted” according to the relatively “loose” schedule in 5<sup>th</sup> year and gradually extended and structured by 2007, with a vision for adequate improvement of the teaching and the development of new textbooks during the subsequent 10 years. Programs and teaching of the disciplines included in the subject “social medicine and medical ethics,” and in the subject “public dental health”, are purposed to develop core competencies [16], and to define the links with the other subjects’ competences. The harmonious combination of fundamental knowledge, technical and clinical skills, achieved by students in the course of their overall dental training, with the knowledge and skills to assess patients’ needs, mobilization of resources and planning activities to achieve certain oral health results for the individual patient and the community as a whole, is the major task of dental public health education. The teaching of the topics included in the courses “Social Medicine and Medical Ethics,” and “Public Dental Health”, is expected to develop all relevant competences, so that graduating dentists in Bulgaria (and not only), be able to start a successful independent dental practice in any European country. The purpose is to provide the students with knowledge and skills to help build the following basic competences:

- Understanding of social and public health phenomena and processes, which take place at individual, group, and community levels;
- Analyzing the determinants and the indicators relevant to public health;
- Taking decisions based on a critical evaluation of the facts and circumstances;
- Solving problems of technological, medical, legal and ethical concern upraising in the course of professional activities.

**General educational objective of the subject “Social medicine and medical ethics”**

**The main educational objective** of this work is to provide the Doctor of Dental Medicine with appropriate knowledge, skills and attitude important for the formation of his/her socio-professional role as a liberal practitioner, while integrated in a public health system [21]. The course of “Social Medicine and Medical Ethics” was developed in accordance with the general educational goals of the program agreed by the department of Public dental health of the Faculty of dental medicine of the Medical university of Sofia, Bulgaria. The content of the course is organized to strengthen the links with the rest of the academic curriculum and to establish a sound basis for the subsequent teaching of the course of “Public Dental Health”. Its content and structure correspond to the general educational purpose of the harmo-

nized with EU competences undergraduate dental curriculum. The interdisciplinary approach promotes further individual professional development after graduation.

### **General educational objective of the subject “Public dental health”**

The Discipline «Dental Public Health» provides knowledge, professional skills and motivation in the following areas:

- Development of healthcare as part of the development of society;
- Management of the health system;
- Preparation of the Doctor of Dental Medicine as a member of a regulated profession;
- Management of dental practice in the real social and market environment;
- Partnership in the implementation of community measures relevant to individual and public goals for better oral health.

The content and sequence are consistent with the Mission of the University and the dental profession: «University education in dental medicine is primarily meant to keep and develop academic and professional autonomy, to encourage the development of professional knowledge and science, to ensure a decent professional realization of its students, to inspire humanity and responsibility, as well as life-long interest to perfection».

The material is organized to succinctly present the most important elements of the socio-professional identification and professional achievements. It observes issues, trends and relationships between different parties and elements of the professionalization of dental practitioners and to assist dental students and dental practitioners in finding their best pattern of practice and building up an appropriate working environment in order to achieve professional prosperity while keeping their health and professional longevity. Last, but not least, stay sensible for the needs of the population for appropriate services, prevention, and better quality of life.

### **Main aspects of continuity and innovation during the transition from “the “Methodology of scientific research section” to the “Social medicine and dental public health department”**

Today, with the programs in “Social medicine and medical ethics” and “Dental public health” for students in dentistry, the objectives set with the establishment of the Department of dental public health, are not only achieved, but far exceeded. With the programs taught by the Department, graduating dentists receive a sound professional training, critical thinking and independence for business decision making, treating patients and legal adequacy. The continuity consists not only in “organization” matters but also in “methodology” [22].

### **Appreciation of the cooperation in connection with the introduction and improvement of programs**

The development and improvement of the dental curriculum, in particular for the disciplines included in the programmes of «Social medicine and medical ethics» and «Public Dental Health», is due in large part to the long-standing cooperation and joint work with professors and experts from:

The Association for dental education in Europe (ADEE),

The Council of the Chief Dental Officers in Europe (CECDO),

The school of public health Harvard University (SPH HU),

L’University “René Descartes”, Paris (laboratoire d’ Ethique Medicale), MEDIS Institute, Minich,

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### **Fields for further development and improvement of the programmes**

The subjects of “Social medicine and medical ethics” and “Public dental health” put up with development and improvement both in terms of teaching forms, and the inclusion of students in self-directed work. The methods of evaluation of knowledge also need improvement. Support students’ creativity, critical thinking, and responsiveness to social and professional issues will lead teachers in the search for new resources for the teaching and training of students. In this sense a tremendous job to overcome the constraints of the subject oriented curriculum and the digitalization of the processes are ahead.

### **Discussion**

In the context of harmonization of dental education in the EU, after a period of mutual visitations and peer reviews, an in-depth analysis of the hour course load, the content and the succession of subjects included in the dental curricula of many EU dental schools had been performed. The comparability of curricula was evaluated. Based on the agreement between dental schools, a set of recommendations was elaborated and the “profile of the dental practitioner” was defined [16].

The major educational goal for the undergraduate dental education was defined as “need to achieve an acceptable level of preparedness of graduates in dental medicine in core competencies”. This new approach prevented dental schools from the endless adding of new themes, new topics or new subjects in the dental curricula. The “profile of graduating dentist” had been published and addressed to dental schools and faculties all over the EU member states.

Core competencies, recommended to achieve a successful professional education of dentists on completion of their studies, are grouped in seven major areas: professionalism, interpersonal communication and social skills, information literacy and dealing with information, ethics and law, clinical preparation in medical disciplines and health promotion, long life learning attitudes.

Upon graduating, doctors of dental medicine must be academically prepared for independent practice in different areas of the profession and are convinced that must continue to educate themselves during whole professional life [21]. The doctor of dental medicine is expected to be able to take independent and responsible professional decisions and solve problems based on scientific evidence and to maintain high moral standards in their professional conduct, putting the patient interest at first place [5,13,20,23]. This would be possible under the condition that the dental practitioners are thoroughly prepared to apply knowledge from fundamental sciences, medical and dental clinical disciplines, but also:

- know the impact of social factors on health and health behaviour of patients, in particular, the dental patient;
- are motivated to assist their patients in overcoming the barriers of psychological and social concerns to seek adequate dental care;
- share the philosophy of the health promotion and prevention of diseases;
- demonstrate good communication skills in leading their teams and work efficiently as a member of the team;
- provide a healthy environment for themselves, their teams and their patients.



### Conclusion

The program of public dental health taught to undergraduate dental students by the department of dental public health of the faculty of dental medicine of Sofia, Bulgaria, was introduced in the undergraduate dental curriculum almost simultaneously with the restoration of the autonomous socio-professional status of dentists in Bulgaria. The program is covering 4 - 5 major areas – social medicine, medical ethics, dental health, dental profession, dental practice, methods of research. Since modern education in dentistry, including theoretical, practical and vocational training, is clearly defined as a tool for the preparation of liberal practitioners, leaders in their field, the significance of the socio-medical research and teaching will constantly increase. The organic link between the teaching of the disciplines of social medicine, medical ethics and public dental health and the clinical areas of undergraduate education would be a prerequisite for the full integration of research, preclinical, clinical and behavioral skills in the clinical training and the overall educational process. One of major key aspects of program development is the large application of the digital technology both in teaching/learning and clinical organization environment. Participation of students in textbooks discussion before publishing should be developed, as well as the regular feedback.

### Conflict of Interest

I declare that no financial interest or any conflict of interest exist in connection with the above publication.

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