
THE IMPACT OF EDUCATION AND PROFESSIONAL QUALIFICATION ON THE QUALITY OF DENTAL CARE

Gergana Georgieva

Medical University of Varna, Department of Dental Material Science and Prosthetic Dental Medicine,
Faculty of Dental Medicine, Bulgaria, Gergana.Georgieva@mu-varna.bg

ORCID ID: 0009-0007-3199-5177

Stefan Peev

Medical University of Varna, Department of Department of Periodontology and Dental Implantology,
Faculty of Dental Medicine, Bulgaria, stefan.peev@mu-varna.bg

ORCID ID: 0000-0003-4846-013X

Abstract: The quality of dental treatment is a complex and multi-component characteristic influenced by many factors, one of which is the professional competence of dental specialists. Nowadays, the focus is on the timely access of high-quality dental services for patients. The educational and professional qualification level of dentists is an important structural factor that influences the process and results of dental treatment. To achieve high quality clinical results and successful dental treatment of patients, following to generally accepted global clinical standards for the diagnosis and treatment of oral diseases is essential. The aim of this scientific research is to study the influence of the educational and qualification level of dentists on the quality of dental services provided. A cross-sectional study was conducted from September 2025 to May 2026. Participants in the research study were given the opportunity to choose between two ways of filling out a questionnaire: an online questionnaire created using Google Forms or on a paper survey card. Participation in the survey is voluntary, and all responses are anonymous. The study consists of 529 patients from different settlement areas in Bulgaria. The questionnaire includes 33 questions regarding the quality of dental services, which patients rated on a Likert scale from 1 (dissatisfaction) to 5 (satisfaction). Data analyse processing was performed using SPSS 31.0 statistical software. For the purposes of the study, an index of the quality of dental services was constructed and Cronbach's α was calculated. The reliability and internal consistency of the individual questions forming the quality index were assessed. Data was based on the confidence level at 95% and probability of error is 5%. The study results show that the quality index improves as the professional status of the treating dental specialist increases. Continuing postgraduate education and the extensive clinical experience of dental specialists are considered in the scientific literature as two mutually complementary factors for success in providing high-quality dental treatment. Assessment of the quality of dental care is a key element for the effective management of dental services. Quality monitoring in dentistry identifies problems as well as areas in need of development and improvement. The implementation of new technologies and the evaluation of dental specialists' professional qualifications and competencies are essential factors influencing the quality of dental care. Providing high-quality dental services is a fundamental objective of contemporary dental practice, as it is associated with improved clinical outcomes, patient trust and long-term patient loyalty.

Keywords: quality of dental care, dental education, professional qualification in dentistry, quality dental service.

1. INTRODUCTION

The quality of dental treatment is a complex and multi-component characteristic influenced by many factors, one of which is the professional competence of dental specialists. Nowadays, the focus is on the timely access of high-quality dental services for patients. The educational and professional qualification level of dentists is an important structural factor that influences the process and results of dental treatment. To achieve high quality clinical results and successful dental treatment of patients, following to generally accepted global clinical standards for the diagnosis and treatment of oral diseases is essential. In their scientific paper, Samuel et al. (2021) analyzes the impact of continuing professional development (CPD) on improving the knowledge, skills and clinical behavior of healthcare professionals, which contributes to improving quality and optimizing health outcomes for patients. The level of education for patients influences their perception of dentists competence, with professional behavior being a significant factor in forming the assessment of the quality of dental services and patient satisfaction (Taibah, 2018). The authors describe effective communication as an important component for improving the quality of dental services (Touati et al., 2022). In their study, Gardiner et al. (2024) concluded that despite the desire and dentists motivation for postgraduate training, there are barriers, including time constraints, financial difficulties, organizational factors and specifics of the dental professionals' work environment. The authors emphasize that overcoming these barriers would facilitate the professional development of dentists and contribute to optimizing the quality of dental services provided. Al Moaleem et al. (2024) emphasize the need for greater consistency of standards in dental education across countries in order to ensure high quality dental education and a comparable level of professional competence of dental

specialists. The aim of this scientific research is to study the influence of the educational and qualification level of dentists on the quality of dental services provided.

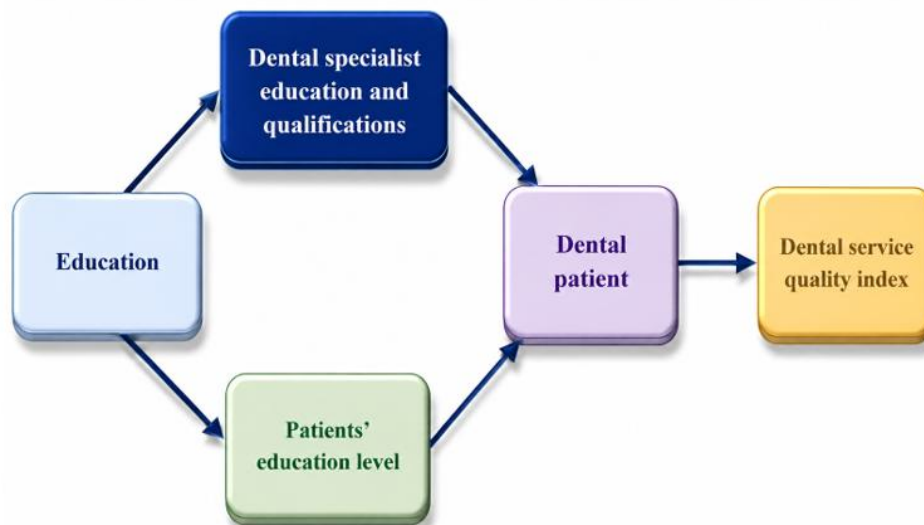
2. MATERIALS AND METHODS

A cross-sectional study was conducted from September 2025 to May 2026. Participants in the research study were given the opportunity to choose between two ways of filling out a questionnaire: an online questionnaire created using Google Forms or on a paper survey card. Participation in the survey is voluntary, and all responses are anonymous. Informed consent for participation in the scientific study was provided to each of the patients. Permission was obtained from the Research Ethics Committee (KENI) at the Medical University of Varna to conduct the study. The study consists of 529 patients (335 female and 194 male) from different settlement areas in Bulgaria. The questionnaire includes 33 questions regarding the quality of dental services, which patients rated on a Likert scale from 1 (dissatisfaction) to 5 (satisfaction). Data analyse processing was performed using SPSS v.31.0 statistical software. For the purposes of the study, an index of the quality of dental services was constructed and Cronbach's α was calculated. The reliability and internal consistency of the individual questions forming the quality index were assessed. Data was based on the confidence level at 95% and probability of error is 5%. The results of the cross-sectional study are presented in a table and graphical form followed by analyses and conclusions. The statistical methods used for processing the data from the scientific study are descriptive statistics, non-parametric statistical methods and comparison of mean values from three independent variables - one-way ANOVA.

3. RESULTS

The scientific study involved 529 patients with an average participant age of 53.01, the average age of women being 52.30 and men's being 54.25. The largest number of patients taking part in the study were in the age range between 50-55 years. For the purposes of the scientific study, a conceptual model was created to investigate the relationship between education and the quality of dental services provided. (Fig.1)

Fig1. Conceptual model of education – quality of dental services



Source: Authors' research

Figure 1 represents a conceptual model that shows the influence of education on the quality of dental services provided. It describes how different aspects of education impact the assessment of the quality of dental care through the interaction and cooperation between dentists and their patients. Education is viewed in two interrelated forms: on one hand - the educational and qualification level of dentists and on the other hand - the level of education of the patients participating in the scientific study. Both aspects of education influence the central subject in this conceptual model – the dental patient. In turn, the patient who received dental care gives his assessment of the quality of dental services provided, which is a structural part of the dental services quality index.

The survey included 33 questions and statements for assessing the quality of dental services, adapted from the models of Donabedian (1988) and Chang, W. & Chang, Y. (2013). The quality ranked questions are divided into

3 sections: structure, process, result. According to the model of Chang, W. & Chang, Y. (2013), they are divided into the following subsections: physical structure, staff structure, process of professionalism, process of interaction, process of reaction, administrative process, outcomes of dental services. The value of Cronbach's $\alpha = 0.989$ was calculated, therefore there is high reliability, high internal consistency between the individual questions on the quality of dental services and an index can be constructed. From the answers to 33 quality statements considering the quality for the purposes of the study an index was constructed.

The relation between the education and level of professional qualification of dental specialists and the mean value of the quality index of dental services is presented in Table 1.

Table 1. Mean value of the quality index according to dentists' professional qualification

The treatment was performed by:	n	Mean value of dental health quality index
Dental medicine student	59	126.441
Dentist without specialty	316	132.567
Dentist with specialty	80	145.875
Associate Professor	30	157.267
Professor	44	163.546
Total	529	137.873

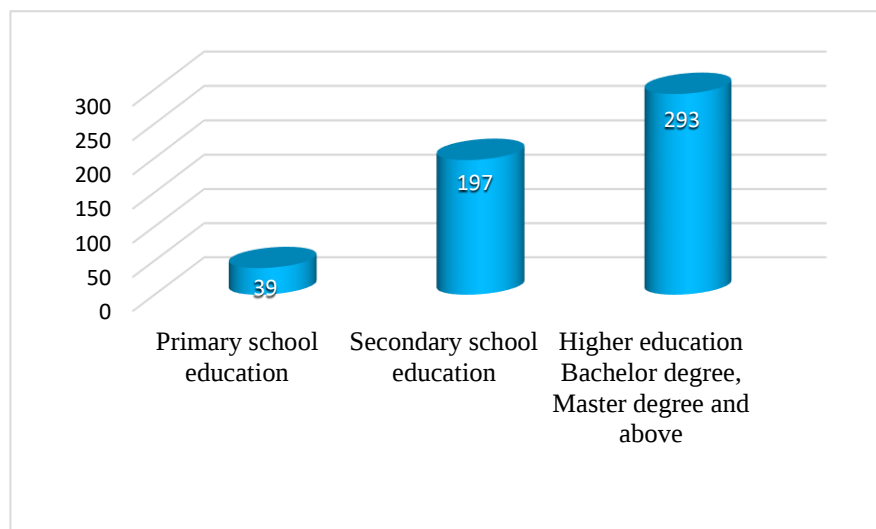
Source: Authors' research

11.2% of the patients participating in the study had their dental treatment done by students from the Faculty of Dental Medicine. The largest number of patients 316 (59.7%) were those who, have decided to visit a Dentist without a specialty in regard to their dental treatment. Dental care from a Dental specialist was sought by 15.1% of the patients in the study. 5.7% of the patients had their treatment done by Associate Professors, and 8.3% of the patients had sought dental care from Professors in the field of dental medicine.

The results of the study show that the mean value of the quality index improves as the professional status of the treating dental specialist increases. The results support the presence of an increasing trend in which dental specialists with higher professional qualifications have higher values of the inspected quality index. The mean value of the quality index of dental services for treatment performed by a Dental Medicine doctor without a specialty is 126.441, and for dental treatment performed by a Professor it is 163.546. The mean value of the quality index of dental services in general is 137.873, a value close to that of a Dental Medicine doctor without a specialty, since they are the most numerous.

Demographic characteristics for patients by level of education. Patients participating in the study were divided into three groups according to their level of education: patients with primary school education, patients with secondary school education, and patients with higher education. (Fig. 2.)

Fig. 2. Bar chart of distribution of patients depending on their level of education

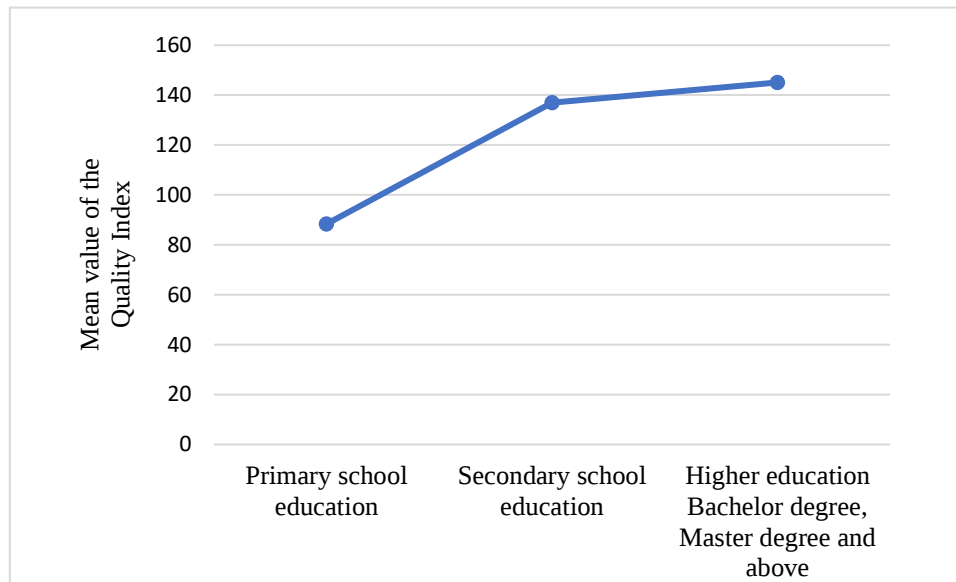


Source: Authors' research

7.4% of the patients who participated in the scientific study had primary school education, 37.2% had secondary school education, and the highest percentage of patients was with higher education - 293 people (55.4%) of the total number of all participants in the study. In the scientific study, patients with higher education, bachelor's, master's and higher qualification degrees prevailed.

For the purposes of the scientific study, a line diagram was constructed including the mean values of the quality index and the level of education of the patients. (Fig 3.)

Fig.3 Average value of the quality index and the level of education of patients



Source: Authors' research

The line chart shows that the mean value of the quality index is highest for patients with higher education. The mean value of the quality index for patients with higher education is 145.061, for patients with secondary school education it is 136.980, and for patients with primary school education it is 88.385. Therefore, the lowest rating for the quality of the dental services provided was given by patients with primary school education.

4. DISCUSSIONS

Continuing postgraduate education and the extensive clinical experience of dental specialists are considered in the scientific literature as two mutually complementary factors for success in providing high-quality dental treatment. Education and professional qualifications determine the level of knowledge and clinical skills of dental specialists, the application of contemporary approaches to the treatment of oral diseases and contribute to improving communication with patients. On the other hand, the level of education of patients affects their health culture and literacy and their ability to understand the health information provided to them by the dentist and his team. The level of education of patients is also decisive for their active cooperation and participation in the treatment process, compliance with postoperative recommendations and care assigned by the treating dentist. Patient education is a key factor in assessing the expectations and satisfaction of patients with the quality of dental services provided.

Ghanbarzadegan et al. (2023) investigated the impact of patients' educational level on the use of dental services. The author concluded that patients with a low level of education have a reduced frequency of seeking timely dental care. Patients with a low level of education are more likely to wait and seek dental care when emergencies occur, which limits the possibility of prevention and early treatment. For this reason they associate dental treatment with pain, discomfort and negative emotional experiences, which also explains the lower score of dental treatment quality given by patients with primary school education. In their scientific work, Ju et al. (2022) concluded that lower patient health literacy is associated with a higher risk of tooth loss. The results of the scientific study by Ju et al. (2022) emphasize the importance of dental health and patient health literacy by improving patients' dental health and promoting the prevention and prophylaxis of oral diseases.

Therefore, according to the conceptual model of Education - Quality of dental care provided, the quality of dental services is the result of the joint influence of the education and professional qualifications of dentists and the level of education of patients, with their interaction determining the final assessment of the dental services quality index.

The mean values of the quality index of dental services among dental specialists with different educational and qualification levels do not vary within very wide range, but rather close values were observed. This proves that the quality of dental services is influenced not only by the level of education of dentists, but also by the clinical experience gained over the years, the skills to make the right decisions related to the treatment of patients, setting the right diagnosis, the desire for continuous improvement in the field of dentistry, attending specialized courses, symposiums and congresses in Bulgaria and abroad, aspiration for continuous improvement, working with new technologies and digitalization in dental practice (Erdilek et al., 2022), continuous postgraduate growth and development.

5. CONCLUSIONS

Assessment of the quality of dental care is a key element for the effective management of dental services. Quality monitoring in dentistry identifies problems as well as areas in need of development and improvement. The implementation of new technologies and the evaluation of dental specialists' professional qualifications and competencies are essential factors influencing the quality of dental care. Providing high-quality dental services is a fundamental objective of contemporary dental practice, as it is associated with improved clinical outcomes, patient trust and long-term patient loyalty.

In conclusion, the quality of dental care is a result not only of the education and professional qualifications of the dentist and his team, but also of the patient's ability to understand health information and make informed decisions about their oral health. The high quality of dental services is formed through the interaction of the dental care provider - the dentist with his skills and competencies and the informed, health-literate patient seeking and receiving the necessary dental care.

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