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Research Article

Postgraduate training of healthcare professionals in Bulgaria: Quality and organization from the perspective of trainees at the Medical University of Sofia

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Abstract

Postgraduate training is a key component of the professional development of healthcare professionals and an essential factor in ensuring high-quality human resources in healthcare. This study analyzes key aspects of the organization and quality of medical specialization training in Bulgaria. It presents the results of a survey involving 418 trainees and examines administrative organization, conditions at training sites, curriculum content, and the development of professional competencies. The findings indicate a high level of satisfaction with the core components of specialization training, while also identifying opportunities to improve facilities and equipment, strengthen the practical focus of training, and enhance the development of competencies required for independent professional practice.

Keywords

healthcare personnel, postgraduate training, quality

Introduction

The professional division of labor emerged with the aim of maximizing the utilization of human potential through professional specialization. This process, in turn, contributes to the further development and differentiation of professions. A profession comprises a set of specialized and general functions, as well as the knowledge, skills, work habits, and capabilities acquired through education and practice. Through these competencies, individuals realize their potential by performing socially useful work that determines their place within the social structure (Vodenitcharov 1986; Kirkov 2023; Kirkov et al. 2022, 2024).

Postgraduate training for healthcare professionals is a fundamental component of professional development and the maintenance of professional competencies. The need for training following the acquisition of a basic professional qualification arises from the dynamic development of medical science, the increasing specialization of medical practice, and the necessity for healthcare professionals to maintain up-to-date knowledge and practical skills throughout their careers (Yerimyan et al. 2025).

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PENSOFT

The historical development of postgraduate medical education reflects a gradual transition from informal training based on mentorship and practical experience to structured specialization systems regulated by professional bodies and state institutions. During the 19th and 20th centuries, models emerged in various countries in which specialization was conducted within hospital and university settings, while standards concerning the duration, content, and assessment of training were progressively introduced. In recent decades, increasing emphasis has been placed on the competency-based approach, in which the primary criterion for completing training is the demonstration of the required knowledge, skills, and professional attributes rather than merely the completion of a prescribed training period (Yerimyan et al. 2025).

In the Republic of Bulgaria, specialty training is regulated primarily by the Health Act and Ordinance No. 1 of 22 January 2015 on Acquiring a Specialty within the Healthcare System. The Ordinance establishes the conditions and procedures for conducting and financing specialty training, as well as the nomenclature of specialties within the healthcare system. Training is conducted at higher education institutions and approved training centers and combines theoretical instruction with practical training.

Postgraduate training entails the acquisition of theoretical knowledge and practical skills in a specific branch of medical science and practice and culminates in a state examination. Training in a medical specialty is conducted over the period specified in the nomenclature of specialties and in accordance with a framework curriculum for each specialty, as approved by the Minister of Health.

The quality of postgraduate training is a multifaceted concept encompassing curriculum content and organization, practical training, the qualifications of training specialists, access to a sufficient volume and variety of practical activities, and the objective assessment of acquired knowledge, skills, and professional competencies. Consequently, modern approaches to quality are gradually shifting the focus from the formal completion of a prescribed training period toward training outcomes and the trainee‘s ability to demonstrate the competencies required for independent professional practice.

Internationally, competency-based medical education (CBME) has gained increasing importance over the last decade. It is an approach in which the organization of training and assessment is based on predefined professional competencies and expected outcomes aligned with the needs of patients and the healthcare system. Unlike the traditional model, in which progress is largely linked to the duration of training and completion of a specific curriculum, the primary criterion in CBME is the demonstration of the required level of competence (Frank et al. 2010; Iobst et al. 2010; Ten Cate 2017). Competence is viewed as a dynamic, multidimensional characteristic involving the integrated application of knowledge, practical skills, professional attitudes, and behaviors within a specific clinical setting.

Implementing this approach in postgraduate medical training entails clearly defining expected competencies, directly observing trainees‘ work in real clinical environments, conducting regular formative assessments, providing feedback, and using various methods to evaluate professional performance. In this way, assessment shifts from being a discrete final stage to becoming an ongoing component of the training process (Iobst et al. 2010). Workplace-based assessment is particularly important because it enables professional competencies to be monitored within the context of actual clinical practice.

In Bulgaria, the regulatory framework also provides a basis for gradual development in this direction. Requirements concerning practical training, the performance of specific activities, internal quality assessment systems, and feedback from trainees provide a foundation for placing greater emphasis on learning outcomes. However, for the full implementation of a competency-based approach, assessment needs to move beyond mere adherence to the curriculum and completion of the final state examination. Instead, it should prioritize the systematic monitoring and documentation of professional competency development throughout the specialization period.

The aim of this article is to present and analyze assessments provided by trainees enrolled at the Medical University of Sofia regarding the organization and quality of postgraduate training for healthcare professionals in Bulgaria.

Research materials and methods

The study focuses on trainees enrolled in postgraduate training at the Medical University of Sofia.

The study was conducted in Sofia between May 2026 and August 2026 and involved 418 medical trainees, of whom 39.2% were men and 60.8% were women.

A range of sociological and statistical methods was employed in the study, including the documentary method; a direct survey conducted using the Google Forms online platform; descriptive analysis; analysis of variance; the Pearson chi-square (χ^2) test; and graphical analysis for the visualization of results. Statistical indicators were evaluated at a significance level of $\alpha = 0.05$.

Quantitative analyses were performed using the SPSS v. 17.0 statistical software package. Microsoft Office products were used for the tabular and graphical processing and presentation of the results.

Results and discussion

Analysis of the data from the first two questions of the empirical study reveals a predominantly positive assessment of the enrollment process for specialization. A total of 65.1% of respondents rated the administrative procedure as excellent (38.3%) or very good (26.8%), while 14.8% rated it as good. A total of 20.1% of respondents provided a satisfactory or unsatisfactory rating (Fig. 1).

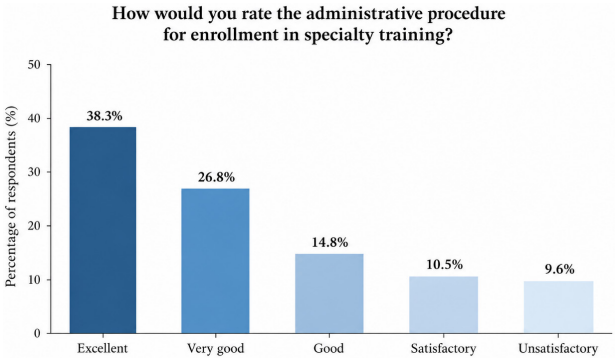

Figure 1. Respondents' assessment of the administrative procedure for enrollment in specialty training.

These results indicate generally good organization of the administrative process. However, the proportion of lower ratings, representing approximately one-fifth of respondents, highlights opportunities for further optimization.

Regarding the objectivity of the assessment during enrollment, the results also indicate predominantly positive perceptions, with more than three-quarters of respondents expressing a favorable view. According to 78.9% of those surveyed, their knowledge and skills were assessed objectively, whereas 7.7% expressed the opposite view, and 13.4% were unable to judge (Fig. 2). The high proportion of respondents who perceived the assessment as objective is an important indicator of confidence in the selection procedure. At the same time, the negative and undecided responses point to the need to maintain clear and transparent assessment criteria, which are an essential component of the quality of postgraduate training organization.

An analysis of the results from subsequent survey questions concerning the training environment reveals predominantly positive ratings regarding respondents' interactions with their specialization supervisors, their level of involvement in the activities of the training unit, and the conditions under which the training process takes place.

Figure 2. Respondents' opinion on whether their knowledge and skills were objectively assessed during the selection process for enrollment in the specialty training program.

The relationship with the specialization supervisor was rated as excellent by 62.7% of respondents and as very good by 16.3%, with the combined proportion of these two highest ratings reaching 79% (Fig. 3). Ratings of the

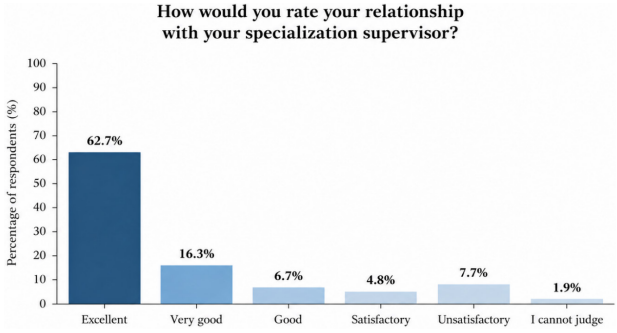

Figure 3. Respondents' assessment of their relationship with the specialization supervisor.

supervisors' scientific background and professionalism were even higher: 78% of respondents rated these qualities as excellent and 10.5% as very good, resulting in a combined proportion of 88.5% (Fig. 4). A comparison of the results presented in the two figures indicates a high level of satisfaction with both the supervisors' professional qualities and their direct interaction with trainees during specialization. These findings are important for the quality of postgraduate training, given the supervisor's pivotal role in theoretical instruction, the practical acquisition of professional skills, the provision of feedback, and the gradual development of professional autonomy.

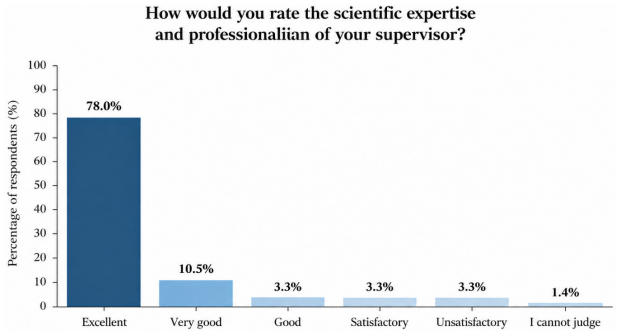

Figure 4. Respondents' assessment of the scientific expertise and professionalism of their supervisor.

An important aspect of practical training is the extent to which trainees are actively involved in the activities of the training unit. Nearly half of the respondents (46.9%) rated their level of involvement as excellent, while 29.2% rated it as very good, bringing the combined proportion of the two highest ratings to 76.1% (Fig. 5). An additional 13.9% described their involvement as good (Fig. 5). Thus, the vast majority of respondents viewed their opportunities to participate in activities at the respective training site positively. Active involvement in day-to-day work is crucial to the practical orientation of specialization because it creates opportunities to apply theoretical knowledge in a real professional environment, develop practical skills, and gradually acquire the competencies required in the respective field. The presence of respondents providing lower ratings indicates that opportunities for practical participation are not perceived uniformly and should

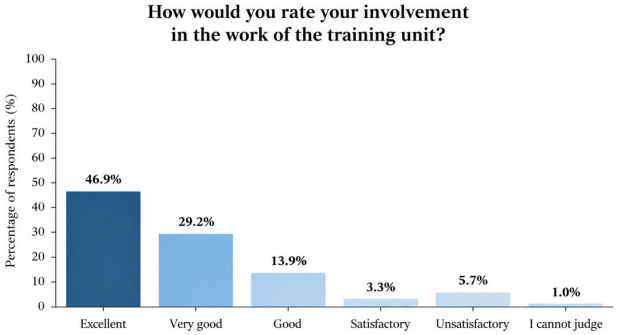

Figure 5. Respondents' assessment of their involvement in the work of the training unit.

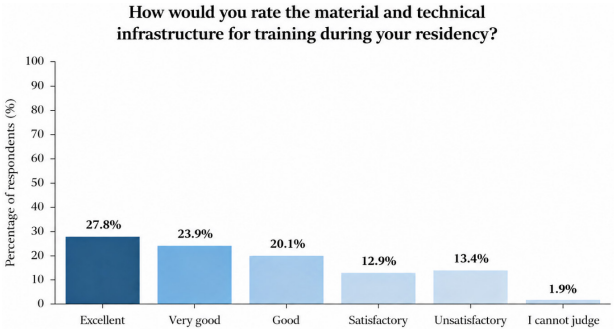

Figure 7. Respondents' assessment of the material and technical infrastructure for training during their residency.

therefore be considered an important indicator when assessing the quality of practical training.

The microclimate within the training unit is also of significant importance to the quality and effectiveness of the training process. More than half of the respondents (57.4%) unequivocally confirmed the existence of an atmosphere of cooperation and support for trainees, while 25.8% selected „tend to agree" (Fig. 6). Thus, the total proportion of positive assessments for this indicator reached 83.2%. A negative assessment was expressed by 13.9% of respondents, who selected either „tend to disagree" or „disagree," while 2.9% were unable to judge (Fig. 6). The results indicate a predominantly positive assessment of the microclimate within the training unit. Relationships based on cooperation and support create favorable conditions for trainees' integration into the unit's activities, effective professional interaction with team members, and the provision of support and feedback throughout the process of acquiring a medical specialty.

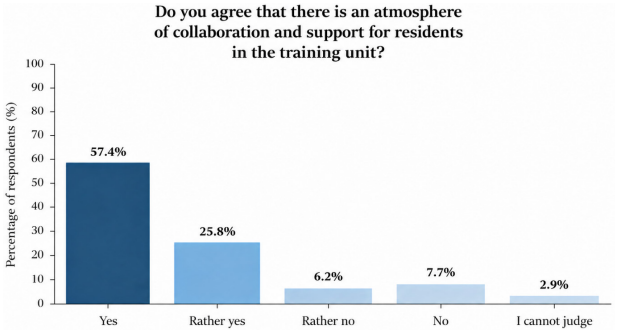

Figure 6. Respondents' agreement that there is an atmosphere of collaboration and support for residents in the training unit.

Greater variability in ratings was observed regarding the material and technical facilities available for training during specialization. An „excellent" rating was given by 27.8% of respondents, „very good" by 23.9%, and „good" by 20.1%, resulting in a total of 71.8% of respondents rating the facilities within the „good" to „excellent" range (Fig. 7). At the same time, 12.9% described the material and technical facilities as satisfactory, while 13.4% considered them unsatisfactory (Fig. 7). Compared with the ratings of the specialization supervisors, trainees' integration into the unit's activities, and the team climate, the assessment of material and technical resources shows a wider distribution of responses and a higher proportion of critical evaluations. Material and technical resources constitute an important structural component of the quality of postgraduate training. The availability of and access to modern equipment and appropriate conditions for practical work are relevant to trainees' ability to acquire and refine the skills and competencies specific to their respective specialties.

An analysis of the empirical study results concerning curriculum content reveals a predominantly positive assessment. Specifically, 29.2% of respondents rated the curriculum as excellent, 28.2% as very good, and 23.4% as good, resulting in a total of 80.8% providing positive ratings (Fig. 8). A satisfactory rating was given by 10.5% of respondents, while 6.7% rated the curriculum as unsatisfactory (Fig. 8). These findings indicate that the curriculum content largely meets the expectations of trainees. At the same time, the proportion of satisfactory and unsatisfactory ratings highlights the need for periodic updates to educational content to ensure alignment with advances in medical science and practice, as well as with evolving requirements for training in the respective specialty.

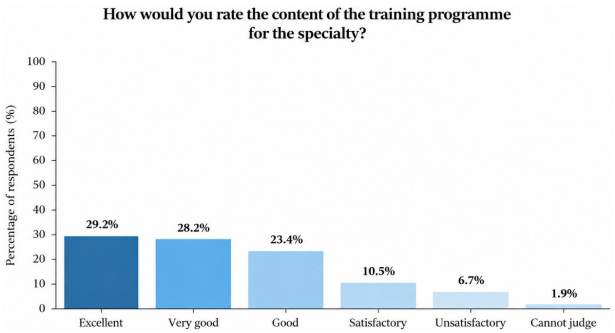

Figure 8. Respondents' assessment of the content of the training programme for the specialty.

Feedback regarding the mandatory courses included in the specialization programs is also positive. More than half of the respondents (56%) rated them as very useful,

while 28.2% considered them partially useful (Fig. 9). The proportion of respondents who did not find the mandatory courses useful was considerably lower, at 7.7% (Fig. 9). These results demonstrate the importance of mandatory courses as a component of specialization programs. At the same time, the proportion of respondents who rated them as only partially useful points to the need for periodic evaluation of their content, practical orientation, and alignment with the specific training requirements of the respective specialty.

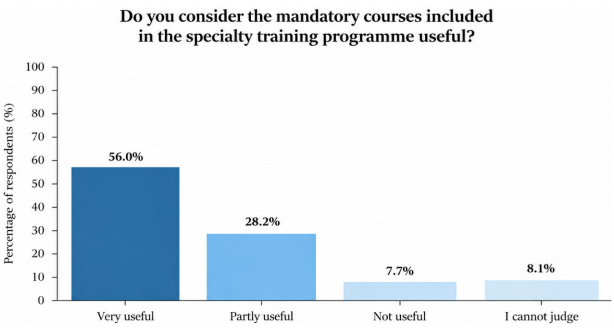

Figure 9. Respondents' assessment of the usefulness of the mandatory courses included in the specialty training programme.

A key aspect of evaluating the quality of postgraduate training is the extent to which specialization develops the skills and competencies required for independent professional practice. According to 46.4% of respondents, the specialization process develops all the necessary competencies, while 39.7% believe that only core competencies are acquired (Fig. 10). The proportion of respondents who feel that specialization fails to develop the necessary competencies is 9.1%, while 4.8% are unable to make a judgment (Fig. 10). These results indicate that, despite a predominantly positive assessment of this aspect of training, fewer than half of the respondents believe that the full range of competencies required for independent practice is developed during specialization. The substantial proportion of trainees reporting the acquisition of only core competencies warrants attention, as ensuring professional readiness for independent practice is a primary outcome that postgraduate training should provide. In this context, the data highlight the need to clearly define expected competencies, ensure their systematic development throughout the training period, and provide sufficient opportunities for their practical application and further development.

Key findings

The analysis of the empirical results reveals a positive assessment of the organization of the medical specialization process among the majority of respondents. Administrative procedures and the enrollment assessment were viewed favorably by a significant proportion of trainees, indicating a solid organizational foundation for commencing specialization. At the same time, the critical feedback received points to opportunities for further optimization of specific administrative aspects of these processes.

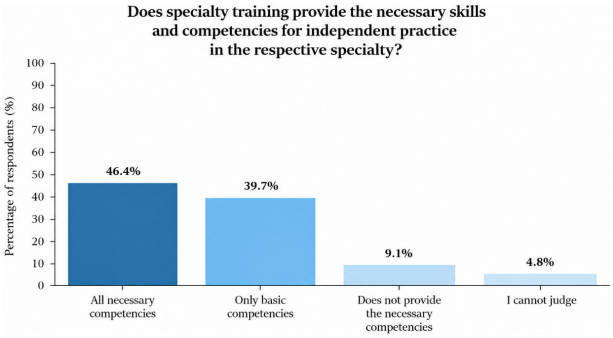

Figure 10. Respondents' assessment of whether specialty training provides the necessary competencies for independent practice.

The quality of training is largely influenced by the conditions at the training facility. Highly rated components include the supervisors' professional and scientific expertise, their interaction with trainees, and trainees' active involvement in practical work. More critical assessments of material and technical resources identify this area as one with potential for improvement, particularly given its importance for the comprehensive acquisition of practical skills.

The curricula and the mandatory courses included within them received a high level of approval from respondents; however, the results also highlight the need for periodic content updates and the maintenance of a strong practical focus. Of particular significance is the discrepancy between the favorable assessment of training content and the more limited confidence regarding the full development of competencies required for independent professional practice. This highlights the need for closer alignment of curriculum content, practical training, and assessment with clearly defined final competencies required for the independent practice of the respective specialty as an important direction for improving postgraduate training.

Conclusion

The quality of postgraduate training is a complex outcome of the interaction among the organization of specialization, conditions at the training facility, curriculum content, and opportunities to acquire practical skills and professional competencies. The results of this study indicate a high level of satisfaction with key components of the training process while simultaneously identifying areas in which improvements could enhance its effectiveness and quality. Of particular importance is orienting specialization toward clearly defined learning outcomes and the systematic development of competencies that ensure the professional readiness required for independent practice in the respective specialty.

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Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statements

The authors declared that no clinical trials were used in the present study.

The authors declared that no experiments on humans or human tissues were performed for the present study.

The authors declared that no informed consent was obtained from the humans, donors or donors' representatives participating in the study.

The authors declared that no experiments on animals were performed for the present study.

The authors declared that no commercially available immortalised human and animal cell lines were used in the present study.

Artificial Intelligence (AI) use

The authors accept full responsibility for the content of the manuscript, including the disclosure of any use of AI.

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Author contributions

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Data availability

All of the data that support the findings of this study are available in the main text.