

**REVIEW**

# Supervisor education and quality of PhD studies: current status and future challenges

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E-mail: [tatjana.pekmezovic@med.bg.ac.rs](mailto:tatjana.pekmezovic@med.bg.ac.rs)**Summary**

Supervision is a specific relationship, where an experienced senior researcher provides guidance, support, and advice to navigate a junior colleague through the barriers to becoming an independent researcher. While supervision is clearly a rewarding duty, it is also associated with a number of challenges. It is clear that supervision involves many responsibilities, which means that the supervisor needs to possess a certain set of skills. While many of these skills are learned in the direct interaction with PhD candidates, it would be beneficial if a more formal and structured training was offered to supervisors, especially at the beginning of their supervision careers, so as to avoid frequent mistakes in the supervisor–PhD candidate relationship. Hence, the idea is to shift from experience-based supervision to professionalization, believing that such an approach would reduce the risk of poor supervision. At present, many universities offer formal education of supervisors. The practice of organized education of supervisors at University of Belgrade Faculty of Medicine started in 2019 with the aim of preparing future supervisors to establish productive and responsive relationships with PhD candidates. After a break due to the COVID-19 pandemic, a revised supervision course was organized in 2022. The survey conducted among the attendees of the two organized courses supported the need for better education of university teachers in terms of supervision skills and leading of PhD candidates. Indeed, considering the fact that PhD outcomes are largely dependent on the supervisor and the successful supervisor–PhD candidate relationship, supporting supervision through formal training and education may be an important step in improving PhD experience and outcomes for both supervisors and PhD candidates.

**Keywords:** supervision, supervisor skills, challenges, PhD studies, education

## INTRODUCTION

Supervision is a specific relationship between two individuals, an experienced senior researcher/teacher who shares critical information with a less experienced junior colleague, navigating through the barriers to his/her successful career (1). A supervisor is a person who can support, advise, and guide a candidate. Supervisor has the potential to become a lifelong friend, or the relationship might only last until the PhD candidate has achieved their goal. Supervision implies specific responsibilities such as creation of a relationship that pairs experience, wisdom, and expertise with new ideas, questions, and obstacles that accompany the research process. Modern definitions indicate that supervision is a dynamic, collaborative, reciprocal, and sustainable relationship, focused on the acquisition of values and attitudes, knowledge and skills, as well as the adoption of the behavior of junior colleagues, so that they become successful independent researchers (2). Recently, supervision of PhD candidates has been recognized as one of the factors that foster research integrity (3).

According to the Standards for PhD education in Biomedicine and Health Sciences in Europe, developed by a joint Organization for PhD Education in Biomedicine and Health Sciences in the European System (ORPHEUS) and The Association of Medical Schools in Europe (AMSE) Task Force (4), supervision is one of eight essential areas in the organization of PhD program (5). In this document, it is emphasized that supervisors need to be scientifically qualified and active researchers in the relevant field, with a continuous scientific production that contributes to scientific literature. Additionally, it is highlighted that universities should ensure that training in supervision is available for all supervisors and potential new supervisors, with the aim of becoming familiar with the local regulations of the PhD program as well as basic duties of supervision (6).

## SUPERVISION SKILLS

It is generally accepted that the quality of supervision is a major predictor for successful PhD projects (7). Specifically, a recent study (8) has shown that solid research environment, including good supervision, is the strongest predictor of PhD candidates' outcomes during their PhD studies, provided that the candidates met certain minimum admission criteria. This highlights the role of a supervisor, not only as a supervisor of a doctoral thesis but also as a provider of the research environment, including patients or specimens, equipment, and consumables, grant support and international contacts and recognition.

Therefore, providing skills development guidance to PhD candidates considering their aptitudes and weaknesses is an important responsibility of a PhD supervi-

sor. Sufficient information on specific knowledge, skills, or attitudes required from supervisors is not widely available in literature. However, Abedin et al. identified major categories of supervisor characteristics: leadership, empowerment, strategic perspective, integrity and judgment skills, creative thinking, and communication skills (9). These characteristics and skills further allow supervisors to train PhD candidates in data analysis, problem solving, scientific writing, and oral presentation.

It is very important to underline that supervision in clinical context appears to require additional competences. Therefore, a PhD supervision program should take into account the requirements of different professional specialties and backgrounds (7).

Communication is certainly one of the most important skills of supervision. Therefore, being able to identify specific characteristics of effective communication becomes important in order to maximize each supervisor-PhD candidate relationship. Handelsman et al. considered that elements of effective communication are those that include providing constructive feedback, communicating effectively across diverse backgrounds, disciplines, generations, ethnicities, and positions of power, identification of different communication styles, and engaging in active listening (10). Madan outlined several key topics that all PhD supervisors should consider, including calibration of expectations, management styles, and tailoring of the supervision experience (11).

## EXPERIENCE-BASED SUPERVISION VS FORMAL TRAINING IN SUPERVISION

Not all PhD candidates are excellent, but not all supervisors are exceptional either. Previous studies evaluating the level of satisfaction of PhD candidates with their supervisors emphasized that in many cases the candidates were not satisfied with the received guidance, and complained of poor or inadequate supervision. Moreover, more than 50% of dropout cases in Denmark were related to the poor supervision received (12). Investigation of the first 23 individuals who completed the new PhD course at University of Belgrade Faculty of Medicine (UBFM) established in 2006 revealed that almost 50% of the candidates were not fully satisfied with how much their supervisors acknowledged their contribution, and almost 15% of the candidates would not recommend their supervisor to another colleague (13). Therefore, there is a huge need for improving the overall level of PhD supervision.

Supervisors may base their supervision style and expectations not only on their own personality but also on previous supervision relationships, including the supervision they received when they were PhD candidates (1). PhD supervision is a two-way learning street, where a candidate receives guidance from their supervisor towards fulfilling the thesis requirements but also "pro-

vides” the supervisor with a practical training opportunity to learn supervision skills along the way. Indeed, most supervisors acknowledge that they learned a lot through interaction with their PhD candidates, but it would be beneficial if more formal and structured training was offered to supervisors, especially at the beginning of their supervising careers, in order to avoid frequent mistakes in the supervisor–PhD candidate relationship. Furthermore, apart from training programs, a form of continuous or sporadic support to supervisors may be of great significance. The entire idea is to shift from experience-based supervision towards professionalization, as it is believed that such an approach would diminish the risk of poor supervision. Indeed, in contrast to the past when supervision was usually acquired through experience, many universities at present offer formal education to supervisors (7). In this context, supervisor education programs are essential, but they should take into account the needs of supervisors as well as specific needs of certain science fields, such as clinical medicine (7).

## CHALLENGES OF SUPERVISION

While supervision is indeed a rewarding duty, it is also a very challenging process. Supervisors need to satisfy conflicting requirements when balancing between the need to ensure their candidates meet the criteria required in order to complete their PhD and the need to respect candidates’ independence and their individual dynamics. Hence, they simultaneously support and demand, which may be frustrating and bring about anxiety and exhaustion of supervisors. While there has been a lot of interest in emotional coping of PhD candidates during their PhD studies and the preparation of their doctoral thesis, the fact that supervision is not just a cognitive but also an emotional endeavor has been largely neglected. A recent study by Han and Xu (14) has focused on supervisors’ emotions during the supervising process and their emotional regulation strategies. In a qualitative study that involved 17 supervisors from China, the authors concluded that negative emotions such as anxiety, frustration, and exhaustion were commonly reported by the interviewed supervisors. The authors also identified and extensively discussed two main emotional regulation strategies of these supervisors, including antecedent-focused approach (where they try to avoid or modulate problematic situations so as to avoid experiencing negative emotions) and response-focused approach (where the focus is rather placed on suppression and relaxation techniques after the emotion has been felt) (14). Clearly, there is room for education of supervisors to help them optimize their emotion regulation strategies to ensure an optimal supervision experience and a successful supervisor–PhD candidate relationship.

An important and frequent challenge of supervision is disagreement between supervisors and candidates. While this is very individual and depends on the supervisor’s and the candidate’s personal characteristics and relevant actions, there are several important objective reasons when a candidate would disagree with their supervisor. A qualitative study in Sweden and England emphasized that the nature of disagreement between supervisors and candidates changes over time, from the beginning of PhD studies towards the final thesis submission. For example, as candidates mature, they would often like to take a more active participation in making decisions related to the work on their thesis (15). There are also other objective sources of candidate’s disagreement. Supervisors are often not up-to-date with the candidate’s work, especially when they are too busy and have many candidates to supervise, which may lead to inadequate guidance and consequent candidate’s frustration; supervisors may offer inadequate or misleading advice due to ignorance or lack of careful consideration of the candidate’s work; there may be conflicting advice or requests from two co-supervisors, where candidates often have to try to balance these contradictory expectations; and personal incompatibility may become apparent during PhD studies (15). Considering these are the situations where candidates would expectedly disagree with their supervisor, it would be essential for supervisors to understand these and other sources of disagreement, so as to either prevent them or recognize them as early as possible. Hence, it has been suggested that the education of supervisors should also include these topics so that they could avoid objective reasons for PhD candidate’s disagreement.

Although providing feedback is an important duty of supervisors, there is not enough relevant research on it, and many supervisors and PhD candidates are often not sufficiently aware of its importance. Feedback is an important pedagogic skill, which is essential for guiding a PhD candidate during their PhD studies; however, it is often a challenge for supervisors (16) and may be a serious source of discomfort and poor relationship between supervisors and PhD candidates (17). Rather than simply evaluating the current status of a PhD candidate, PhD candidate’s research work, or paper writing, providing feedback is important to guide the PhD candidate towards growing and improving. However, this is a very sophisticated skill, and it is not equally developed in everyone. Moreover, different PhD candidates may differently respond to the same feedback from a supervisor. As supervisors are often not skilled enough in providing constructive and appropriate feedback, there has been growing awareness of the fact that supervisors need special training on providing feedback (18). One of the suggested formats is a micro-feedback session, where supervisors are trained to develop or improve appropriate feedback skills using feedback-based scenarios, simulated candidates, and standardized checklists (18).

Another challenge is to ensure the compliance with good research practice. It has been shown that research environment is particularly important for PhD candidates' good research practice (3, 19). Specifically, research misconduct is more common in cases with poor supervision (20). In this context, a supervisor should be a 'role model' for their PhD candidate and lead them towards adhering to good research practice and avoiding any form of research misconduct (3, 21). However, not all supervisors are sufficiently aware of the provisions of good research practice; with this in mind, it is important to provide training of supervisors on the topics of research integrity so that they can confidently discuss topics of research misconduct and guide their PhD candidates on the path of research integrity (19). This is of particular importance to young supervisors (3).

## SUPERVISOR TRAINING

The role of a supervisor has often been adopted through experience, but today, universities offer more formal sources of learning such as supervisor training courses (5), as recommended by ORPHEUS (4). Education can be organized at an international level and a local level. The course program usually includes standard topics such as the supervisor's role, the correlation of supervisor and PhD candidate's expectations, methods and approaches in supervisor-PhD candidate communication, conflict management, etc. Courses usually consist of lectures, structured group exercises, and plenary discussions.

The practice of organized education of supervisors at UBFM started in 2019 with the aim to prepare supervisors in biomedical research and help them to establish productive and responsive relationships with their current or future PhD candidates. The first such educational event was organized for 25 newly appointed Assistant Professors on February 20, 2019, as a one-day course including three lectures and two workshops. The lectures were related to new trends in PhD education in Europe, and the structure and characteristics of PhD program at UBFM. The workshops were oriented towards challenges of supervision (led by a psychologist), and assessments of the originality of PhD thesis (led by a university librarian). Due to the COVID-19 pandemic, there was an interruption in organizing supervisor training events. In line with the received feedback from the first supervisor training course, a revised course was prepared and organized on March 22, 2022. Like the 2019 course, the 2022 course included 25 newly appointed Assistant Professors. In addition to the program of the 2019 course, the 2022 course included three case studies (all related to common real-world problems in supervisor-PhD candidate relationships), which allowed additional and fruitful discussion with the attendees on concrete examples from university practice. All of the participants who success-

fully completed one of these courses received certificates and fulfilled evaluation forms that comprised 13 questions about the quality of the course content, lecturers, time, duration, and organization of the course (22). The course organized in 2022 was rated as excellent by 76% of attendees (vs. 56% for the 2019 course;  $p=0.209$ ), and 80% of the participants reported that they had received high-quality information regarding the topic (vs. 52% for the 2019 course;  $p=0.037$ ). It should be noted that 88% of participants who attended the course in 2019, and 76% of attendees in 2022, admitted that they had not attended any course for pedagogic development before. Twelve percent of participants after the 2019 course considered that it would have been useful if more psychological topics had been included, especially in the field of the supervisor-candidate relationship; although such topics were additionally developed for the 2022 course, 14% of the 2022 course attendees still felt that these topics could be further expanded. Moreover, about a third of future supervisors suggested that additional education about supervisor skills might be very useful, especially in the form of thematic online courses (22). These findings implicate a need for better and continuous education of university teachers in terms of supervision skills and providing guidance to PhD candidates.

## CONCLUSIONS

While supervision is doubtlessly a rewarding duty, it is also associated with a number of challenges. Considering that PhD outcomes are largely dependent on the supervisor and the successful supervisor-PhD candidate relationship, supporting supervision through formal training and education may be an important step in improving PhD experience and outcomes for both supervisors and the PhD candidates.

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## Conflict of interest

None to declare.

## Author Contributions

PM and TP conceived and wrote the paper, revised it for important intellectual content, and approved its final submission.



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## EDUKACIJA MENTORA I KVALITET DOKTORSKIH STUDIJA: TRENUTNO STANJE I BUDUĆI IZAZOVI

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### Sažetak

Mentorstvo je specifičan odnos, gde iskusniji, stariji istraživač daje smernice, podršku i savete mlađem kolegi/nici kako bi mu/joj pomogao da uspešno savlada sve prepreke na putu ka nezavisnosti. Iako je mentorstvo u osnovi vrlo lepa dužnost, ono je povezano i sa mnogobrojnim izazovima. Mentorstvo podrazumeva brojne odgovornosti, što od mentora zahteva određeni skup veština. Iako se mnoge od ovih veština uče u direktnoj interakciji sa kandidatima, korisno je mentorima ponuditi i formalnu, strukturiranu obuku, naročito na početku njihove mentorske karijere, kako bi se izbegle česte greške na relaciji mentor–kandidat. Samim tim, u uverenju da bi takav pristup smanjio rizik od lošeg mentorstva, raste podrška ideji da mentorstvo ne treba zasnivati samo na ličnom iskustvu i intuiciji već, pre svega, na profesionalnoj obuci. Mnogi univerziteti danas nude for-

malno obrazovanje mentora. Praksa organizovane edukacije mentora na Medicinskom fakultetu Univerziteta u Beogradu je počela 2019. godine sa ciljem da se budući mentori pripreme za uspostavljanje produktivnih i odgovornih odnosa sa kandidatima. Nakon pauze zbog pandemije COVID-19, 2022. godine je organizovan novi kurs za unapređenje mentorskih veština. Anketa polaznika ova dva organizovana kursa je podržala potrebu za boljim obrazovanjem univerzitetskih nastavnika u pogledu mentorskih veština i vođenja studenata doktorskih studija. Zaista, s obzirom na to da rezultati doktorskih studija u velikoj meri zavise od mentora i uspešnog odnosa mentora i kandidata, podrška mentorstvu kroz formalnu obuku i edukaciju može biti važan korak u poboljšanju ishoda doktorskih studija kako za kandidate tako i za same mentore.

**Ključne reči:** mentorstvo, mentorske veštine, izazovi, doktorske studije, edukacija.

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