Medical Teachers' Entrustable Professional Activities for Clinical Education

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Abstract

Background: A medical teacher has a wide range of roles and responsibilities that vary from a medical teacher to a trainer and finally a clinical specialist. Most medical teachers receive limited training to prepare them to provide effective teaching and clinical supervision.

Objectives: The current study aims to develop core entrustable professional activities (EPAs) for medical teachers related to more effective clinical education.

Methods: This study was conducted in two phases. The first phase focused on defining an initial set of EPAs. The second phase focused on developing this set via a nominal group technique (NGT) among 30 faculty clinical specialties until a consensus was reached.

Results: The total of 29 EPAs in the five dimensions were agreed upon by more than 70% of the participants. Most of the activities were identified in the curriculum planning activities (n=11). Further details on the characteristics identified in each of the five dimensions of the EPAs are provided.

Conclusion: By adopting EPAs and a structured competency framework for educators, the quality of teaching and subsequently the learning experiences of trainees can be significantly improved, ultimately benefitting patient care.

Keywords: Entrustable Professional Activities; Faculty Development; Nominal Group Technique; Medical Teachers; Competencies

Background

The institutions try to improve or develop the competencies of medical teachers in their current responsibilities and continuously upgrade and redefine their competencies (1). A medical teacher has a wide range of roles and responsibilities that vary from a medical teacher to a trainer and finally a clinical specialist (2). Most medical teachers receive limited training to prepare them to provide effective teaching and clinical supervision (3). It has been observed that they often deal with problems in effectively carrying out their academic responsibilities due to the lack of training (4-6). Furthermore, evidence shows that medical teachers have insufficiently prepared across traditional competencies of medical knowledge, clinical skills, professionalism, and newer competencies of evidence-based practice, quality improvement, interdisciplinary

teamwork, and systems to perform their functions effectively (7). Indeed, attaining a qualified medical teacher has been associated with developing many roles, leadership positions, and responsibilities in medical education (1). However, if they see proper educational programs in this regard, they will definitely become better teachers (3).

Entrustable professional activities (EPAs) are units of professional activities, i.e., tasks or responsibilities that can be implemented, observed, and measured independently in terms of procedures and outcomes, and when an individual acquires sufficient competencies (1). Fitzgerald (2016) stated that educational methods, curriculum development, teaching community, evaluation, and leadership skills are competencies of medical teachers required for achieving EPA-based competence (2). Iqbal et al. (2018)

reviewed existing medical teacher education programs that incorporated EPAs in their frameworks to provide further insights into how the EPA concept is adopted (3). Furthermore, according to Iqbal (2019), EPAs can serve as a new framework for planning and implementing structured programs for faculty development and evaluating the skills of small-group facilitators after training (4). Van Dam et al. (2021) used EPAS to improve teaching at the patient's bedside, including preparation, a safe learning environment, flexible teaching, and patient benefits, and introduced a description of structured EPAs (5). Van Bruggen et al. (2022) developed a set of nine EPAs as a foundation for improving the initial and continuous professional development of university teachers in health professions education (6). It appears that existing frameworks of EPAs for medical teachers are limited. While previous educational environment frameworks have focused on various dimensions such as teaching and learning, few have adequately integrated assessment as a critical component affecting students' perceptions (7). The research highlights a specific decline in positive perceptions of the educational environment during clinical years, which appears to be underexplored in current frameworks. Most existing studies tend to generalize findings across all phases of medical education without delineating the unique challenges and experiences faced by students in clinical settings (8, 9). The development of a holistic educational environment framework that encompasses personal development, teaching methods, assessment, facilities, support systems, and curriculum is rare (10-12). Although they may successfully meet the requirements of a longitudinal training program, they do not clearly describe the activities and competencies required for comprehensive roles for a medical teacher. Indeed, the effort to implement effective faculty development programs for medical teachers to provide effective clinical education with the aim of assessing, training, and reassessing their competencies indicates the necessity of developing a comprehensive, flexible, and context-based framework. This is an entrustable professional activities framework for medical teachers that includes both personal and professional competencies and is needed for a teacher's academic activities. Furthermore, it also helps medical teachers who are looking for ways to increase student achievement, which could serve as a foundation for teaching and qualification competencies and professional opportunities.

Objectives

The current study aims to develop core entrustable professional activities (EPAs) for medical teachers related to more effective clinical education.

Methods

This study was conducted in two phases. The first phase focused on defining an initial set of EPAs. The second phase focused on developing this set via a Nominal Group Technique (NGT) among medical teachers until consensus was reached. The ethics committee of the National Center for Strategic Research in Medical Education approved the protocol for this study (IR.NASRME.REC.1400.505).

Development of initial EPAs: The initial list of EPAs was used using the frameworks suggested in previous studies (13-16), as well as the list of competencies related to the faculty development program (FD) for faculty members for essential competencies of medical education at Kerman University of Medical Sciences (KUMS), and the initial list included 62 activities (Appendix 1).

Study design and setting: This NGT study was conducted on clinical specialties affiliated with the KUMS who were invited to a nominal group technique meeting in 2023.

Participants: In the first phase of the study, a nominal group meeting, 15 clinicians participated. In the study's second phase, which was the voting stage for the qualifications obtained from the first phase, 32 clinicians working at Afzalipour Hospital participated. The criterion for enrollment in the study was at least five years of work experience in clinical education (13, 14).

Data collection: The NGT proposed by Humphrey Morto et al. (2017) with modifications of stage four (voting) was used to identify and reach a consensus about the most important EPAs of medical teachers (13). The participants were provided with instructions about the concept of EPA and related examples during the meeting, and the consent form was also sent in printed form. The NGT meeting was held at one of the KUMS-affiliated hospitals in September 2023 and was managed by a medical education specialist (S.S).

In the first stage, silent idea generation, the purpose and procedures of the meeting, and a brief overview of the EPA concept were presented by one of the authors. a list of initial ideas was provided to participants and shown by a video projector (Appendix 1). Participants were asked to write their ideas independently and silently in response to questions written on the papers

given to them. At this stage, participants were not permitted to discuss their answers with others. The participants were expected to determine the EPAs required by medical teachers in clinical education to train competent medical graduates; this step took ten minutes.

In the Round-Robin recording of ideas, The Facilitator invited participants to share the ideas they generated while the facilitator wrote them down. Participants were encouraged to use other participants' responses to write new ideas that may not have been considered in the previous round. All responses were typed word-by-word in Word Office@2016 (Microsoft Corporation, Redmond, Washington, USA) by a medical education specialist and simultaneously displayed to the participants using a video projector. During these steps, the number of responses was not limited; the participants could list as many activities as they wanted. This step took 30 minutes to complete.

In the group discussion stage, the facilitator briefly discussed each suggested item to clarify the ideas proposed by the team of clinical experts for the initial assessment and consolidate similar responses without any judgment or criticism. Participants discussed verbal explanations or more details about any ideas that colleagues generated, which may not have been clear to them. The facilitator allowed people to participate and discuss all ideas to avoid spending too much time on one idea. In this step, necessary efforts were made to neutralize, and judgment and criticism were avoided. At this stage, new ideas were suggested for discussion and items were combined into categories, but no ideas were eliminated. This step took 40 minutes to complete.

In the ranking of ideas step, participants were asked to prioritize each item. They were then asked to evaluate the importance of each EPA on a five-point scale (unimportant = 1, very important = 5). If the participants did not agree with the ideas, the next idea was discussed. The ideas were sorted based on the score they received from the participants, and the priority list reflected group consensus.

In the Tally of the ranking step, the ideas that received too many and too few votes in the previous step were discussed. The purpose of this step was to finalize ideas for important EPAs for medical teachers. In this step, an agreement was reached on the ideas that should be eliminated, and the ideas that received a good score were evaluated in the next step.

In the final step, the ranking review was completed in the next session because of the workplace of the clinical teachers (participants in the nominal group). Therefore, the classified activities in the form of a questionnaire were presented to the participants of the NGT meeting in person at the Afzalipoor Educational Hospital, and they were asked to evaluate the importance of each EPA. Questionnaires were distributed and collected (Figure 1).

Data analysis: Quantitative and qualitative methods were used to analyze the data collected during the NGT meeting. For qualitative analysis, the first author (S.S) read and reread the narratives and extracted relevant characteristics. Then, another author (A.A) independently reviewed the initial coding procedure. Two authors discussed and agreed on the extracted characteristics. The extracted characteristics were merged based on similarities and then grouped into dimensions using a previously described framework (15). The characteristics of a medical teacher with some examples of the participants' quotes. The characteristics and dimensions were revised by other authors (M.O and M.I.).

In the quantitative analysis phase, descriptive statistics, including frequency, mean, and standard deviation, were calculated using Microsoft Excel 2016 (Microsoft Corporation, Redmond, Washington) to summarize the raw data collected from the voting phase. The frequency of votes was calculated to report the level of consensus, and the mean values were calculated based on the number of participants as well as a measure of dispersion to report the importance of rating each characteristic.

The consensus was defined as 70% agreement for ratings 4 (important) and 5 (very important) (13). In addition, an existing valid framework (O'Neill's framework) was used to classify medical teacher activities (15).

Results

Thirty-two specialists in internal medicine, general surgery, obstetrics and gynecology, and dermatology voluntarily participated in the three-hour NGT session (Table 1). A total of 32 participants completed the questionnaire in the voting phase. Moreover, 16 participants (50%) in the NGT meeting and the voting stage were female; internal medicine had the highest clinical teaching experience among the participants.

In the qualitative analysis phase, a total of 62 competencies were classified in the five dimensions as

examples of quotes (Table 2). After quantitative analysis, 29 EPAs in the five dimensions were agreed upon by more than 70% of the participants. Most of the activities were identified in the curriculum planning activities (n=11) (Table 3). Further details on the characteristics identified in each of the five dimensions (Table 4).

Discussion

The findings of this research showed five domains and 29 entrustable professional activities for medical teachers. These dimensions were curriculum planning, applying technology enhanced, developing effective communication skills, developing professional activities, and conducting scholarship teaching of learning. Among the strengths of this study is the presentation of a general framework with EPAs that was developed in collaboration with medical educators who were closely familiar with the strengths, challenges and needs of medical teachers. In addition, due to the limited evidence regarding the development of EPAs for medical teachers, this research will help to improve the existing evidence.

Similarly, Srinivasan et al. (2011) identified a set of competencies for effective medical teachers in addition to teaching skills (16). Groupon et al. (2016) used competency-based education and EPAs in the curriculum for the Master's program in health professions. They used EPAs to determine the duties of medical education professionals in competency classifications such as teaching theory, curriculum development, and evaluation (17). Dewey et al. (2017) also suggested early EPAs such as trainee skill assessment, mentoring, individual or small group instruction, large group instruction, and learner-centered clinical learning and indicated that a faculty member must be assessed for competency in EPAs before beginning their role as a teacher (13). As Rosenbaum (2012) described, medical teachers in any setting need content knowledge, learner-centeredness, professionalism, communication, practice-based reflection, and systems-based practice (18).

The findings from this study show that the EPAs of medical teachers were related to their competencies in using advanced technologies in medical education. Much evidence points to the increasing importance of technology in medical education. Technology can enhance learning by providing interactive and engaging experiences for medical students, as well as improving access to educational resources. the potential benefits of using technology to simulate medical procedures and

scenarios, allowing students to gain practical experience in a safe and controlled environment (19). Virtual reality (VR) in medical education can be used to simulate medical procedures and scenarios, allowing students to practice and develop their skills in a realistic environment (20). Gamification can be used to engage students and make learning more enjoyable while also promoting critical thinking and problem-solving skills. the potential benefit of using gamification for medical simulations, is that it allows students to practice decision-making and teamwork in a fun and interactive way (21). Furthermore, many educators may not feel comfortable or confident using new technologies and may require training and support to effectively integrate them into their teaching. the potential benefits of providing a continuum of professional development opportunities for faculty, such as workshops, conferences, and online courses (22). Bray et al. (2020) proposed a systematic approach to faculty development with the desire to be flexible and reach potential participants, and using the existing infrastructure can facilitate the participation of evaluators in the new evaluation culture. Moreover, the interaction between the participants during the training sessions not only promoted their learning but also created cooperation to build a group (23).

Although the available evidence to express the competencies needed by medical professors in new technologies is limited, due to the advancement of technology in medicine, the required competencies of medical teachers have also changed. Suitable strategies for improving it, such as involving stakeholders in the decision-making process, providing clear communication and training, and ensuring that technology is aligned with educational goals and outcomes (24). Medical teachers must have the ability to use new technologies and be able to turn them into practical applications in the education of medical students. In addition, they must have the technical and analytical abilities necessary to evaluate and choose appropriate technologies for teaching students. Additionally, they must have the necessary management skills to implement educational programs using technology.

Furthermore, the findings of the present study indicated that effective communication skills and the role modeling of professional behavior improve the effectiveness of clinical education. Medical educators' communication skills in clinical education play an

important role in creating a positive and safe learning climate for students, leading to a happy and motivating environment for students, which improves student learning. Bremer et al. (2021) reported 5 EPAs for medical educators, including medical consultation, medical procedures, guidance and education, communication and collaboration, and nonclinical activities (25). One of the core activities for medical teachers was curriculum planning, leading to the effectiveness of clinical education. Curriculum planning involves clinical training course planning and implementation, which gives meaning to this field. Furthermore, this study highlighted evaluation and scholarship as one of the aspects of EPAs, improving the effectiveness of clinical education. Boyer (1990) defined universities as knowledge institutions in which knowledge activities (production, management, transfer, and application of knowledge) take place. According to Boyer's definition, university faculty members, as knowledge activists, should provide the four knowledge activities in a proportionate manner (26).

It seems that providing FD programs and EPAs based on medical teachers at levels appropriate to the context and their level of competence in teaching can be a way forward. Medical teachers whose teaching is a reliable aspect of their professional work should be assessed, trained, and periodically reassessed to determine if they maintain their qualifications. In this regard, EPAs have been proposed that will lead to the professional development of medical teachers and provide the best possible education for learners (13). Steinert (2006) states that medical teachers should be trained in areas such as teaching, barriers to successful teaching, competency-based assessment, hidden curriculum, educational technology, and scholarship of teaching and learning (SOTLs) (27). Additionally, in another article, he considers a successful FD program to include professional development, teaching, organizational development, and program evaluation (28). McLean et al. (2008) have pointed to things such as higher education, curriculum, research knowledge, leadership and professional development, and teaching methods (29). Trowbridge & Bates (2008) refers to things such as improving teaching and learning, clinical skills, professional development, performance management techniques, and research skills (30). Eventually, since the present study examined the features of EPAs and the necessary capabilities of medical education for medical teachers, the extracted

EPAs can be suitable options for evaluating and FD for medical teachers.

One limitation of this article is its focus on studying in one center and a small number of medical teachers. If it is conducted with the participation of several centers and internationally, better results will be achieved. Second, there was a lack of familiarity among medical teachers with EPAs before conducting this study, which requires providing educational lectures on this topic.

Conclusion

This study advocates for a competency-based medical education (CBME) approach, which includes evaluating specific teaching EPAs to ensure that faculty are adequately prepared to supervise and educate trainees. Moreover, continuous professional development in medical education for faculty emphasizes that updates and evaluations of teaching competence should be part of their ongoing professional journey. By adopting EPAs and a structured competency framework for educators, the quality of teaching and the subsequent learning experiences of trainees can be significantly improved, ultimately benefiting patient care. The paper acknowledges potential barriers to implementing such a framework, including time constraints and the financial implications for institutions, but emphasizes that these challenges can be overcome with proper planning and commitment.

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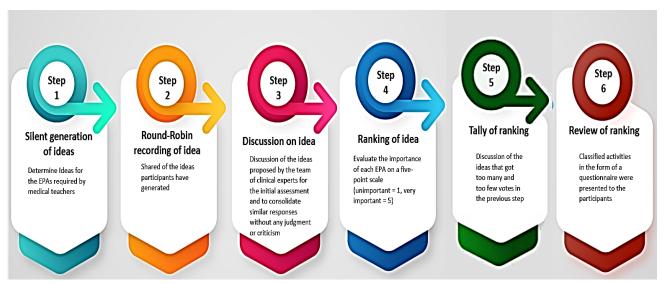
Figure 1. Nominal group technique steps to develop entrustable professional activities for medical teachers

Table 1. The participants' demographic characteristics

Specialty	NGT session		Voting session	
	Number (female/male)	%	Number (female/male)	%
General surgery	4 (2/2)	27	6 (2/4)	18.75
Internal medicine	6 (4/2)	40	16 (6/8)	50
Obstetrics and Gynecology	2(2/0)	13	6 (6/0)	18.75
Dermatology	3 (1/2)	20	4(2/2)	12.5
Total	15	100	32	100

Table 2. The dimensions of medical teacher characteristics and examples of the participants' quotes related to EPAs

Dimensions of medical teacher characteristics	Examples of quotes
Curriculum planning	"A teacher must be capable enough to develop their own lesson and course plans based on the curriculum". "A teacher should be able to use appropriate teaching methods according to the nature of the course and not convey everything to the medical student through lectures". "At the beginning of the course, the teachers should make all the necessary arrangements to offer the course in the best way possible". "In addition to teaching students, the teacher should lead them to lifelong learning and help the students as a supporter". "The teacher teaches essential content and assesses each learner's abilities in their area of expertise". "Teachers should regularly update their knowledge and constantly engage in identifying the latest scientific articles and sources". "Teachers are always known for their effective teaching, and students participate in their classes with great interest".
Developing effective communication skills, and role modeling	"The teacher demonstrates a commitment both to learner success and to helping them grow in their professional roles". "The teacher demonstrates the best behavior as a model for the learners and sets those behaviors as a model for them".
Scholarship teaching of learning	"The teacher demonstrates continuous self-evaluation and ongoing training to improve one's effectiveness and capacity as a medical teacher". "The teacher is not aloof to the students' issues and problems but tries to make them empowered to confront their problems".
Evaluation and scholarship	"The teacher continuously seeks to evaluate the educational environment and solve challenges and tries to increase the quality of clinical education". "The teacher is familiar with educational scholarship and identifies clinical education issues, and publishes the results of their work".

Table 3. The dimensions and number of the generated and agreed characteristics of medical teachers

Dimensions	Generated competencies(n=62)		Agreed EPAs(n=29)	
	Positive	Negative	Positive	Negative
Curriculum planning	13	4	11	2 (Merged)
Applying advanced enhance technologies	6	3	5	1 (Merged)
Developing effective communication skills, and role modeling	5	3	4	1 (Deleted)
Developing Professional activities	7	7	4	3 (Merged)
Conducting scholarship teaching of learning	8	7	5	3 (Merged & deleted)
Total	39	23	29	10

Table 4. The consensus level of EPAs of medical teachers

Dimensions		EPAs	Consensus level	
			%	Mean (SD)
Curriculum planning	EPA1	Determining and implementing educational goals (aim and objective) based on the curriculum,	100	4.53(0.49)
	EPA2	Compilation and implementation of the course and lesson plans	84.61	4.23(0.69)
	EPA3	Implementation of the appropriate teaching methods	76.99	3.69(0.82)
	EPA4	Collaboration with other colleagues in curriculum planning	100	4.46(0.49)
	EPA5	Management of the appropriate learning environment	100	4.30(0.46)
	EPA6	Providing effective feedback	100	4.23(0.46)
	EPA7	Evaluating the academic achievement of the trainee	100	4.23(0.42)
	EPA8	Producing a good learning environment for learners	99.1	4.18(0.51)
	EPA9	Facilitating learning along with high-quality patient care	84.61	4.07(0.61)
	EPA10	Implementation of appropriate assessment methods	92.30	4.15(0.53)
	EPA11	Conducting of quantitative and qualitative analysis techniques to analyze test results	76.92	4.07(0.72)
Applying advanced enhance technologies	EPA1	Conducting e-learning and hybrid teaching strategies in clinical education	76.92	4.15(0.76)
	EPA2	Instructional designing based on new technologies in medical education	92.30	4.00(0.78)
	EPA3	Applying digital technologies in training, assessment and promotes rich learning experiences for trainees	76.92	4.00(0.67)
	EPA4	Developing knowledge, and skills in applying technologies enhancement,	76.92	4.07(0.72)
Developing effective communication skills, and role modeling	EPA1	Implementing the principles of professionalism in training,	84.61	4.15(0.66)
	EPA2	Counseling on dysfunction, personal crises, and professional issues to trainees	92.30	4.30(0.60)
	EPA3	Planning, directing, and supervising to train professionalism and effective communication skills with patients	84.61	4.23(0.69)
	EPA4	Mentoring in training professionalism programs, in parallel	92.30	4.00(0.39)
	EPA5	Identifying and reinforce the learning, skills, and behaviors	76.92	3.92(0.91)
Developing Professional activities	EPA1	Identifying strengths and weaknesses in teaching	84.61	4.00(0.78)
	EPA2	Applying results of assessing the teaching effectiveness	84.61	4.07(0.61)
	EPA3	Participating in faculty development (FD) and Continuing Professional Development (CPD)	100	4.53(0.49)
	EPA4	Monitoring and Reviewing advancement of knowledge in the specialized discipline	84.61	4.23(0.69)
	EPA5	Directing professional support programs	84.61	4.07(0.61)
Scholarship teaching of learning	EPA1	Evaluating the educational environment	92.30	4.53(0.63)
	EPA2	Planning to resolve or reduce challenges and problems in the clinical setting	84.61	4.53(0.74)
	EPA3	Writing, introducing, and communicating scholarship in teaching and learning activities	76.92	4.00(0.67)
	EPA4	Sharing and publishing the results of scholarship activities in scientific reports format	92.30	4.46(0.63)

Appendix 1. List of Articles for medical teacher's competencies

Categories	Competencies
Curriculum Planning	1. Clinical teaching (Heflin et al. 2009) 2. Commitment to teaching (Walter et al. 2018) 3. Excellence in teaching practice (Sawatzky et al. 2009) 4. Facilitating (learning, professional development, assessment) (Ross and Stenfors-Hayes 2008) 5. Curriculum design and instruction (Tucker 2017) 6. Curriculum developer and implementer (Harden R. M. and Lilley 2018) 7. Curriculum design (Poindexter 2013) 8. Development (of learning content) (Molenaar et al. 2009)
Assessment of Learning	1. Assess student performance (Walter et al. 2018) 2. Assessment and evaluation (Robinson 2009; Poindexter 2013) 3. Assessment and evaluation of students and programmes (WHO 2013) 4. Assessment and feedback (EURACT 2012; Bearman et al. 2018; Chuenjitwongsa et al. 2018) 5. Assessing learning (Tucker 2017) 6. Assessor and diagnostician (Harden R. M. and Lilley 2018) 7. Enhancing learning through assessment (Academy of Medical Educators 2010; London Deanery 2014; Royal College of Surgeons of Edinburgh 2018, 2019)
Educational Research and Scholarship	1. Being a professional educator and trainer (Royal College of Surgeons of Edinburgh 2019) 2. Being a researcher (Ahmady et al. 2020) 3. Champion for scientific enquiry (Harper and Maloney 2017) 4. Educational research and scholarship (Academy of Medical Educators 2014) 5. Educational scholarship (Heflin et al. 2009; Graziano et al. 2019) 6. Excellence in teaching scholarship (Sawatzky et al. 2009) 7. Learning and community building (professional development, building institutional links, research) (Ross and Stenfors-Hayes 2008) 8. Pedagogical (knowledge and practice) (Zlatanovic et al. 2017) 9. Scholarship and leadership (Wyman et al. 2019) Scholarship of teaching and learning (Tucker 2017)
Educational Leadership and Management	1. Academic executive management and educational leadership (Ahmady et al. 2020) 2. Educational leadership (Graziano et al. 2019) 3. Educational leadership and management (Royal Australasian College of Physicians 2018) 4. Excellence in teaching leadership (Sawatzky et al. 2009) 5. Leadership and collaboration (Poindexter 2013) 6. Leadership and management (Harris BJ et al. 2012; Keshmiri et al. 2019) Manager (Prideaux et al. 2000; Royal College of Physicians and Surgeons of Canada 2013; Zeitoun et al. 2020)
Communication and collaboration	1. Active collaboration (Walter et al. 2018) 2. Change agent (Harper and Maloney 2017) 3. Communication skills (Moynihan et al. 2015; Zaweski et al. 2019) 4. Interpersonal skills and attributes (Bearman et al. 2018) 5. Advocate and positive role model (Wyman et al. 2019) 6. Attitudes (personal characteristics and professionalism) (Zlatanovic et al. 2017) 7. Being a professional educator and trainer (Royal College of Surgeons of Edinburgh 2019) 8. Professional relationships (with learners) (Walter et al. 2018) 9. Professional responsibility (Knox et al. 2020) 10. Advocacy (mentoring and supporting learners) (Russo et al. 2019) 11. Information provider and coach (Harden R. M. and Lilley 2018) 12. Mentoring and advising (Graziano et al. 2019) 13. Mentoring and guiding personal and professional development (Royal College of Surgeons of Edinburgh 2019) 14. Mentorship (Srinivasan et al. 2011; Zaweski et al. 2019) 15. Role model / practitioner / mentor (Zeitoun et al. 2020) Supervisor / facilitator / coach / teacher (Zeitoun et al. 2020)
Educational Environment, Quality, and Safety	1. Adapt to student learning needs (Walter et al. 2018) 2. Establishing and maintaining an environment for learning (Academy of Medical Educators 2010; London Deanery 2014; Royal College of Surgeons of Edinburgh 2018

	3. Ethical thinking skills (Moynihan et al. 2015)
	4. Learner centeredness (Srinivasan et al. 2011; G♀rlitz et al. 2015; Brink et al. 2018; Zaweski et
	5. al. 2019)
	6. Learners and learning (Gardner et al. 2017)
	7. Learning environment (Knox et al. 2020)
	Supporting and monitoring progress (Royal College of Surgeons of Edinburgh 2019)
Clinical skills and patient safety	1. Care management (Harris DL et al. 2007)
	2. Clinical expertise (Bearman et al. 2018)
	3. Ensuring safe and effective patient care through training (Academy of Medical Educators 2010; London Deanery 2014; Royal College of Surgeons of Edinburgh 2018)
	4. Knowledge of determinants affecting health (Moynihan et al. 2015)
	5. Promote quality and safety patient management (Olivares et al. 2017)
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