Original Article

Exploring Dimensions and Factors Affecting Medical Faculties' Teaching Competency: A Qualitative Study

Hossein Didehban[1], Azim Mirzazadeh[2, 3]*, Hamid Reza Khankeh [4, 5]

[1] PhD Candidate of medical education. Department of Medical Education, Tehran University of Medical Sciences, Tehran, Iran. [2] Department of Medical Education, Tehran University of Medical Sciences, Tehran, Iran; Health Professions Education Research Center, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran. [3] Department of Internal Medicine, Tehran University of Medical Sciences, Tehran, Iran. [4] Professor in Emergency & Disaster Health, Research Center in Emergency and Disaster Health, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran. [5] Department of Clinical Science and Education, Karolinska Institute, Stockholm, Sweden.

Abstract

Background: Many studies have revealed a significant relationship between students' learning and teachers' teaching competencies; however, other studies explore that teaching competency dimensions are confusing. The purpose of this study is to explore dimensions and factors affecting the medical faculties' teaching competencies based on the experience of faculties at Tehran University of Medical Science. **Methods:** We conduct a qualitative content analysis study using grounded theory data analysis recommended by Corbin and Strauss 2008 . Purposeful sampling was used to select the participants. Participants were 15 basic and clinical medical faculties from Tehran University of Medical Sciences. Data were collected through semi-structured interview and demographic information. **Results:** Based on experiences of participants, factors affecting medical faculties' teaching competencies fit in four categories: "expertise in medical knowledge", "establishing an interactive learning environment" "teaching technical ability" and "personality characteristics." Each category will have its subcategories. **Conclusion:** The results showed that from the viewpoint of faculty members teaching competency included having the highest degree of scientific knowledge, developing an interactive learning environment, and having the technical ability for knowledge delivery and some personality characteristics. Moreover, findings have shown that the faculty members pay less attention to curriculum development in the teaching process. Combining these dimensions with learning theories may be useful in the effectiveness of faculty members' teaching in Iranian context.

Keywords: Teaching, Competency, Medical Faculty, Content Analysis

Introduction

Medical Faculties enter the medical universities with different educational capabilities. Accordingly, medical universities have different expectations from lecturers [1]. Teaching is as an important medical faculties capabilities that medical university are looking for ways for improving it [2]. Faculties teaching methods is one of the factors which can play an important role in the students' academic performance [3]. The study by Alexander et al. showed "more than %89 of teacher time spent for teaching [4]; therefore, teaching is one of the most important faculty competencies. The term of teaching competence defined by Passi and Lalitha means "effective performance of all observable teacher behavior that brings about desired pupil outcomes" [5, 6]. Moreover, Tigelaar mentions that the teaching competency is "set of knowledge, skills and attitudes, and personal characteristics needed for effective teaching in various teaching contexts"[7]. Nevertheless, studies have shown that teachers reacted negative perspective to teacher competencies. They described competencies were unusable, intricate, complicated, and difficult to understand [2]. Result of other studies that shown competency framework that integration role of faculty tasks such as education, research and administration and describes the roles and competencies of the medical teacher [8, 9] are not practical and impractical use for medical teachers and planners for on-going faculty development [10] and having confusing in the dimension of teaching competency [2]. Furthermore, the existing teaching competencies frameworks in higher education have too details and less attention to teacher personality and they do not adapt to modern teaching methods [7]. This is while the in-depth studies in teaching competency are very limited in Iran. Available studies in this

Address for correspondence: Azim Mirzazadeh, Department of Medical Education, Tehran University of Medical Sciences, Tehran, Iran; Health Professions Education Research Center, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran;
Email: Mirzazad @ tums.ac.ir

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area in Iran are descriptive and focused on competency frameworks for medical graduates, none of the frameworks is focused on defining teaching medical faculties competencies dimension [11]. Moreover, since the context of medical education in Iran is quite different, qualitative studies on faculty teaching competencies dimensions are essential for effective interventional planning [12]. Overall, There are various factors affecting the teaching of medical faculty members in the clinical setting [13, 14] The culture and context in basic and clinical science faculty different and most medical faculties play multiple roles in Iranian health care system [15, 16]. Finally, the challenge of demonstrating teaching competencies may be some clinical teacher leaving teaching activities [2]. Therefore, the study was aimed at achieving a comprehensive understanding of dimension and factor affecting medical faculties' teaching competency in Iranian context and its determinants based on the experiences of stakeholders including the medical faculties in basic and clinical fields.

Materials and Methods

Method

This study is an inductive qualitative content analysis using grounded theory data analysis according to recommendations by Corbin and Strauss (2008) [17] among medical faculties in School of medicine and Educational Hospitals of Tehran University of Medical Sciences. This paper is part of a larger study that has explored the process of medical faculties development.

Study Design

The researchers conducted the semi-structured interview and constant comparison analysis to obtain participant experience. In this regard, the applied strategies included expert check, peer check, and interviewer training; and engaging experts in qualitative studies in the research team were used for data analysis. The results are presented as codes, subcategories, and categories using an inductive approach.

Participants and Study Setting

Participants were selected through purposeful sampling from faculties who were believed to have the most information, regarding their experiences with their teaching. Study samples included 15 of the medical basic teachers and clinical teachers in different disciplines and academic degrees. Faculty members with higher academic rank than assistant professor with experience in academic research in the field of medical education and five years of experience in teaching at different levels at medical school and educational hospital were considered as the primary criterion for participation in the study. All study participants were residents of Tehran University of medical science, interested in sharing their experiences. As agreed with the participants, interviews with the clinical teachers were conducted at their hospital, and interviews with basic science faculties were done at their workplace.

The endpoint for sample selection was reaching data saturation regarding teaching competency factor.

Data Collection and Analysis

the data were collected between July 2016 and May 2018 through semi-structured interviews with the participants. Interviews were conducted by the author with experience in research on the faculty development and faculties training for conducting qualitative interviews. Interviews with basic and clinical faculties started with their experience of teaching, and according to the interview guidelines, general open-ended questions were asked saying, "What do you do to have good teaching? What did you do to develop your teaching skill? Then, depending on the context of the responses, the interviewer continued with exploratory questions such as "Can you please give an example" to clarify the concepts. The duration of the interview ranged between 45 and 60 minutes depending on the willingness and situation of the respondent. At the end of the interview, additional information was obtained by asking them "Would you like to add anything else? After each interview, audio files were listened to several times and verbatim transcriptions were prepared. Each entire interview was considered as an analysis unit; after which, the semantic units were identified. Then, the condensed semantic units were abstracted and labeled with a code. They were then compared based on differences and similarities and sorted into sub-categories and categories. If the code did not match any of the subcategories, a new subcategory was formed (Table 1).

Table 1: A part of the process of creating the subcategory and main category of teaching competency

Coding sample	Subcategory	Main category
The motivation for content delivery Taking time to transfer content The ability to deliver content The art of presenting the material Efficient delivery of content	Content delivery capability	Teaching technical ability
Interpersonal communication Verbal communication Communication with students Interacting with students	Communication skills	Development of interactive learning environment

Trustworthiness of data

The data were obtained during two years (2016-2018) and deeply analyzed. Moreover, we used the expert check, and peer check during data collection and analysis. Research processes are described in detail and triangulation in sampling was used to ensure validity and some sections of the transcriptions and extracted codes were sent to two medical teachers (qualified in the field of medical education and qualitative researches) [18].

Ethical Considerations

This paper is part of a larger study that has explored the process of medical faculties' development. This study was approved by the Ethics Committee of Tehran University of

Medical Sciences (IR.TUMS.MEDICINE.REC.1396.2949). Furthermore, informed consent form was received from participants before each interview.

Results

The participants of the study were 15 faculties, 7 women and 8 men who took part in 15 interviews (Table 2). Our study participant's experiences about teaching competency and its determinants were grouped in four categories: "expertise in medical knowledge" ,"development interactive learning environment", "teaching technical ability", and "personality characteristics", each of which had its own subcategories. These results are summarized in (Table 3) and discussed in the following sections.

Table 2: Participants' characteristics

Variable	Number
Gender	
Male	8
Female	7
Educational level	
Assistant professors	2
Associate professors	5
Full professors	8
Specialty (basic or clinical sciences)	
Basic science	8
Clinical science	7

Table 3. Categories and subcategories extracted from the qualitative content analysis of participants' experiences

Subcategory	Category
Master of the medical knowledge	Expertise in Medical knowledge
Updating the medical content	
Having scientific capability	
Using humor in teaching	Development of interactive learning environment
Understanding Student's demand	
Center for concerned students	
Having good communication skill	
Having attractive conversation	
Trying to engage all learners in teaching	
Content delivery capability	Teaching technical ability
Scenario base and having the deductive approach	
Applying new teaching methods based on conditions	
Planning and designing learning	
Showing learning path to the learner	
Creating curiosity and questioning in students	
Assessing knowledge of student	
Providing student feedback with different level	
Bridging the gap between theory and practice	
Being generous in teaching	Personality characteristic
Professional commitment to training	
Motivation to lifelong learning	
Not having stress	

Category 1. Expertise in Medical Knowledge

This category was classified into three subcategories including master of medical knowledge, updating the content, and having the scientific capability.

Master of the Medical Knowledge

Some basic and clinical faculties state that mastering in medical science and scientific mastery are the first steps in teaching competency. A basic science faculty stated, "a faculty must first have full academic knowledge in the subject matter" (p 3). (P Stands for Participant).

Moreover, a basic science faculty mentions that: "The faculty's ability to have mastery of subject matter and having content expertise in the field of study. I.e., if I have epidemiology, I know the methodology if a gastroenterologist knows the example of his own field. In the first, I'm an expert on the content that I have delivered (p 4).

Updating the Medical Content

The faculty believed that teaching is a way to deliver updated content. A basic science faculty said, "I think a faculty must have an appropriate level of knowledge; updating and encompassing the scientific resources and scientific literature in the field are considered as major sources (p 3).

Having Scientific Capability

The faculties mention that having good teaching requires academic capacity in the faculty. A basic science faculty believes that, "The faculty members are required to have the scientific capability of completing the course, but ultimately having knowledge and science in scientific resources is not a reason for this, which can be a good educator, two distinct categories that need to be taught actually (p 5).

Category 2. Development of Interactive Learning Environment

This category included six subcategories of "Using humor in teaching"- "Understanding Student's Demand"-"Center for Concerned Students"- "Having Friendly Communication", "Having Attractive Conversation"-"Trying to engage all learners in teaching."

Using Humor in Teaching

According to the experience of basic and clinical faculties, using humor in teaching is an important part of teaching competency. A clinical faculty commented, "Now I might make a joke in class, I would also suggest making a funny

joke so that the students do not feel like the class is too dull. I try to make a fun environment in clinical training." (p 15)

Understanding Student's Demand

Participants have stated that paying attention to the student's demand is one of the key elements of teaching competency.

A clinical faculty said, "We need to focus on what the student needs at the moment and what matters to our concerns" (p 6).

Moreover, a basic science faculty stated, "It's important to learn the problems of the students and train them in accordance with their needs." (p12)

In addition, another clinical science faculty mentions that, "It is important that when I want to go to the classroom and have scientific content, what do students expect from me?" (p8)

Center for Concerned Students

The participants emphasized that teaching competency is required to pay attention to student's concern. A basic science faculty mentions, "The student's personal life challenges affect the work life of the students, which in turn affects their teaching process and leads to academic failure." (p 12)

Furthermore, a basic science faculty stated, "It's very important for us to know that a student is a human with all aspects of the existence of a human being. This may have financial problems. Maybe you are in the age when they are, for example, fallen in love or interested. There may be family problems. The teacher should consider these problems and provide conditions for student education that the best efficiency with the least amount of time." (p 5)

Having Good Communication Skill

Many faculty members emphasized that having a friendly communication skill with students is important in teaching competency.

A basic science faculty stated that, "The faculty member should be able to establish a relationship with the students that, through the establishment of this relationship, the content, material and the capabilities that can be transmitted are transferred" (p 3).

A clinical faculty believes that, "I have to have a good interaction. I could interact with the senior assistant and with the junior assistant." (p 1)

Moreover, a basic faculty commented, "The faculty empowerment should be in the communication skill, able to make relationship with the student." (p 4)

Furthermore, a clinical faculty mentions that, "For someone who is a faculty, there are a lot of other capabilities, one communication skill that does not differ in each level. All faculty needs to acquire these skills." (p 7)

Another basic science faculty mentions, "Physician training requires that you can establish a human and interpersonal communication with a student." (p 12)

Moreover, another clinical faculty states, "Especially in the medical field, interactions are very important, interaction with patients, student's colleague and that person are morally able to manage these interactions." (p 6)

Having Attractive Conversation

The faculty believes that it is important to have an appropriate conversation for the content delivery in teaching.

A clinical faculty states, "If a faculty member for any reason has the inappropriate conversation and inappropriate content delivery, he/she may not be a good and strong teacher. When you do not have a good conversation, this leads to the students not to be attracted by you." (p 6)

Trying to Engage All Learners in Teaching

Attempting to engage students in the teaching process is another important factor to teach from the faculties' point of view.

A clinical faculty mentions, "I'm trying to ask lower-level students (juniors) rather than higher level student (senior.) This will make all students present, participate, and engage in the teaching process." (p 15)

Category 3. Teaching Technical Ability

This category was classified into nine subcategories as follows.

Teaching skills refers to the skills and capabilities of the teacher for the class as well as how to use the Educational Assistance Equipment and Assessment of Knowledge, Skills and Attitudes of students.

Content Delivery Capability

Many faculties and expertise emphasized that the main role of faculties in teaching is having the skill and ability of content delivery.

A basic science faculty states, "One thing I realized that a good professor who wants to deliver the whole subject matter, that is, he/she has the full motive to transfer the content.." (p 11)

Moreover, a clinical faculty states:, "A good teacher means that, in addition to having good knowledge, he/she can transfer and deliver the knowledge." (p 1)

A basic science faculty mentions, "The ability to transfer content and to have an appropriate interaction with his/her audience, I think, is the second feature that a faculty should have." (p 3)

A basic science faculty mentions, "A faculty must have knowledge transfer skills and this capability." (p 2)

A clinical faculty mentions, "I have to know how to transfer this knowledge to another, this transfer of knowledge has one thousand ways." (p 7)

A basic science faculty stated, "A professor who is not capable in this field, that is, he/she cannot present a subject matter, and a professor who does not take time to be able to transfer the contents is not a capable professor for teaching." (p 11)

Also, a basic science faculty states, "A good teacher means that, in addition to having good knowledge, he/she can transfer that knowledge; although most faculties have very high information, they are good teachers not at all ." (p 1)

Scenario Base and Having the Deductive Approach

Some faculties believed that The teacher should become familiar with the deductive teaching approach and modern teaching methods.

One of clinical faculties commented, "The faculty should define a scenario for his/her class, which means that I need to have a scenario in my mind today that I want to talk about. For example, my Thalamus hypothesis, this scenario is not a repeated scenario for my medical student. Before that, I will define a scenario for each class. Now, what do I want to start with? What do I start with? What kind of questions do I ask to motivate them?" (p 9)

In addition, another clinical faculty mentions, "What we really need to be a professor at our university is to be familiar with the active and deductive teaching methods. This is to know that teacher center learning is not a very efficient method." (p 10)

Moreover, a basic science faculty mentions, "One of the pillars of modern educational methods is to reduce the distance between learners and lecturers; i.e., the teacher will be aware of the status of his/her students and how many percent they know about the meaning of the content." (p 14)

Applying New Teaching Methods Based on Conditions

Some faculties state that a faculty should be able to implement new teaching methods based on the existing conditions.

A basic science faculty mentions, "If we are in fact a group that uses modern training methods, it will be a good effort, and conditions need to run and we should implement these new teaching methods. For example, when 100 or 200 students are in a class, you cannot implement the new method at all. When the class for these lectures is limited, what is the new method that we want to implement?" (p 14)

Planning and Designing Learning

Some faculty mentions that having the pre-planning for learning and the teaching process is the key to teaching competency.

A basic science faculty mentions that: "Sometimes while driving or when I go from home to university at 8 am, I have a class in my mind, I review the examples that I want to teach today, sometimes these examples are completely accidental in my mind." (p 11)

Moreover, a clinical faculty, states, "I give past readiness for my students; for example, I give students the bone splinting CDs before students enter the Orthopedics course. They watch the CDs and describe that what did the course and orthopedic lesson are about? Where are they applicable? What are dangerous with them? How good is splint for each fracture?" (p 10)

In addition, another clinical science faculty mentions, "I want to go to the class for two hours; so I have plans to perform teaching for all the classroom moments." (p 6)

Showing Learning Path to the Learner

Some faculty believes that a faculty should be aimed at showing students a learning path.

A clinical faculty mentions, "What we did before in our general and internal department in the hospital was not something we wanted to hold the classroom saying everything to the student. We try to show students that what the path is." (p 13)

Creating Curiosity and Questioning Students

Some faculty members have focused on asking questions from students in the course of study and increasing the motivation of the faculty.

A basic science faculty mentions, "If my learners in fact have no questions and no new idea to learn when we are in class, it's obvious that I do not find an incentive to go into more accurate and up-to-date information to deliver students." (p 12)

A clinical faculty mentions, "Usually the students I teach have just entered the clinical setting. They are very interested to know what is going to the hospital. They are not seeing another department of the hospital and it motivates me. They are interested in learning. I often get the idea of the students, themselves." (p 13)

Assessing Knowledge of Student

Some faculty members consider the assessment of knowledge of students as a part of teaching competency.

A basic science faculty states, "The University now wants us in almost 90% of cases to design exam questions before we go to class. Really, not all our efforts give students duplicate

questions. We do not even repeat questions from different educational levels. If the field is different from the academic level, we do not have to repeat questions." (p 1)

Providing Student Feedback with Different Levels

Some faculty says that providing feedback to students at different levels is one of the faculty's capabilities in teaching.

A clinical faculty mentions, "I give feedback that is based on the condition for example. I am giving feedback based on the situation, it may not be in the form of direct criticism, and for example, he says it is better if you do this. Have you tried? Read it? Come on tomorrow read it with each other. I am not going to tell him right why did you do this? You did it wrong! I tell him indirectly. I say you do it, maybe it's better. I do not have a student (I train Fellowship) in the system, but naturally criticizing the students' work because the goal is to raise it, I give (him/her) direct feedback." (p 7)

Bridging the Gap between Theory and Practice

Some faculties consider the relationship between theory and practice important in teaching.

A clinical faculty mentions, "What we do in the general and internal department of the hospital is to link between the futuristic and the present. What is the application of the lessons of basic science in clinical practice? So that, we can attract students to practice in future by creating the bridge theory." (p 8)

Category 3. Personality Characteristic

Some faculties found the personality traits of the professor important in teaching competency. This category was classified into four subcategories as follows.

Being Generous

Some faculties believe that the faculty should provide full information and have generosity in teaching.

A basic science faculty mentions, "The professor who is not generous is not capable of teaching and cannot completely provide information for students. This means that one day a student will be better than me." (p 11)

Professional Commitment to Training

Some faculties emphasized that a faculty should instruct students with a professional commitment.

A basic science faculty states, "We have collections of content delivery methods. For example, lectures or discussions and different methods. We also carry a lot of content transmissions through our own behaviors. I have to make a commitment to the students." (p 3)

Moreover, a clinical faculty mentions, "A very important issue, that a professor needs to have, other than theoretical knowledge and practical skills, is a professional commitment to her/his work and education." (p 9)

Motivation to Lifelong Learning

Some faculties said that a faculty member should be motivated by his/her own education and have lifelong learning in teaching development.

A clinical faculty mentions, "I've got a lot better in training and having programming than four years ago. I've improved myself. I know a lot of my issues, I'm trying to improve and fix it." (p 7)

Not Having Stress

Some faculties have highlighted the lack of stress in teaching.

A clinical faculty mentions, "If you are a professor, you can do something to stress the students leading them never learn anything. But if the student sees that his/her teacher, for example, doing skilled, well and simple and not having stress, this builds his/her self-confidence". (p 10)

Discussion

In this study, researchers classified the factors influencing medical faculties' teaching competency into four categories including medical knowledge expertise, establish a learning environment, teaching technical skill, and personal characteristic. Some studies have addressed the characteristics of a medical teacher and teaching competency that are consistent with the results of our studies. Tigelaar et al. note that the key elements of the existing framework for teaching competency in higher education included such as mastery in content knowledge, deductive approach, organization, and scientific competencies. They also mention that the key elements of effective teaching included appropriate assessment and feedback, a clear goal, active engagement of learner, control class, and respect of students. Moreover, they mention that the teacher's personality influences his/her view of himself/herself and belief as well as professional identity. Who is teacher? And what role he/she plays in teaching? [7] in our research, the teacher personality characteristic is also mentioned. This dimension includes being generous, professional commitment motivation to lifelong learning, and lack of stress. Görlitz showed the main competencies for medical teachers in Germany, including student-center, social and communication, professionalism and role modeling, reflective thinking and continuing education [19]. In our study, participants pointed to factors such as good communication and motivation to lifelong learning that affect the teaching competency. Furthermore, these results are in line with Miller who has considered the expected qualifications of a medical teacher including cognitive competencies, social competencies, operational competencies, and meta competency. In this review, "designing curricula, developing courses, presentations, course materials, instructing small and large groups in different educational settings, assessing student performance, and evaluating program effectiveness are considered as an academic medical teacher's competencies. According to the findings, communication skill and

teaching technical ability are that same social competency and operational competency [9]. The study by Ragan et al. shows that the competency of teaching includes "active learning, management, active teaching, use of technology, solving issues and disagreements between students during teaching, implementing laws and policies" [5]. Based on the findings of the current study, having an interactive learning environment in teaching competency is same of active learning and teaching, solving issue, and disagreements. The findings of the current study are to some extent consistent with a study by Alexander to define the faculty teaching competencies. Teaching content, recognizing the role of students in teaching, teaching skills like communicative skills, interpersonal skills, public speaking skills, knowledge of program standards, knowing the subject matter, and knowing systematic curriculum design are the important components of the model [4]. Based on the findings of the current study, having adequate knowledge and skills and having good communication are important factors in teaching competency. Robert et al. believe that faculty teaching competencies include seven facets including "Developing a climate conducive to learning, actively engaging learners, assessing a learner's knowledge, skills, and attitudes, facilitating the learner's educational goals, providing feedback to learners, reflecting and assessing their own teaching competencies, and fostering self-directed and lifelong learning" [6]. In total, this dimension has 32 subcategories. Based on the findings of the current study, developing an interactive learning environment, teaching technical ability and personality characteristics are similar to and compatible with the components of this study. The study by Mehdinezhad reveals the total of six items identified as the main elements of faculty teaching efficacy in Sistan and Baluchistan Province in Iran including "Communication skills, assessment, subject matter, curriculum and instruction, learning environment, and implementing technology" [20]. In our study, expertise in medical knowledge and teaching technical ability was consistent with the results of this study. Passi and Lalitha developed a General Teaching Competency Scale (GTCS) consisting of three areas and 21 teaching skills including Planning (Pre-instruction), Presentation (instruction), Closing, Evaluation, and Management (post-instruction) [5]. It seems that the instructional skills are consistent with technical ability and development of interactive learning environment. Aghamolaei J. et al emphasized some ideal educational environment. Establishment of a supportive atmosphere with no tension for learning, having good communication and respecting student is the role of some faculty in teaching [21]. In the results of our study, we have identified an interactive learning environment and good communication skills consistent with the results of this study. Akbari Lakeh et al. showed that prioritizing faculty members to score different aspects of teaching competency include "classroom management, organized instruction, communication skill, professional responsibilities, positive learning environment, preparation for instruction, professional development and leadership, and assessment of student performance." [22] Another finding of our study that showed less participation of faculty members in curriculum development as one of the qualification indicators of teaching competency is despite the fact that various studies showed that one of the main roles of faculty members in the teaching process is designing lesson plans as well as developing curriculum [9, 23, 24]. Harden et al. refer to the roles of the medical teacher in twelve roles in six areas including "Information providing, Role model, Facilitator, Assessor, Curriculum and course planner, and Resource developer" [25]. Less participation of faculty members in curriculum development and lesson plans may return to a training system in the Iranian context. in the medical education system, the curriculum is being developed more by the Ministry of Health and Medical Education [26] and the structure of the education system is more centralized and top to down. Consequently, in Iran, the teaching of faculties is more influenced by the decisions of the ministry and faculty members that have less authority in curriculum development. In the end, it is worth noting that if the teaching competency refers to one of the factors affecting university productivity and student learning, adequate training and the inclusion of new teaching methods in faculty development programs may lead to increased academic competency of faculties. Moreover, combining these dimensions with learning theories may be useful in the effectiveness of teaching of faculties in the Iranian context.

Conclusion

After analyzing the participants' interview, the teaching competency dimensions were grouped in four categories: "expertise in medical knowledge", "development of interactive learning environment", "teaching technical ability", and "personality characteristics." In a general conclusion of the research findings, teachers should know how to develop interactive learning environment, and have friendly communication, try to engage all learners in teaching, have the content delivery capability and expertise in medical knowledge, create curiosity between the students, assess the knowledge, and provide student feedback in a different level. In our results, faculties were less interested in curriculum development as one of the qualification indicators of teaching competency. This may be due to the centralized training structure of the medical education system in Iran. Finally, we believe that the teaching based on the main attributes of teaching competency causes promote faculties' teaching skills. in this regard, it is suggested that further studies be conducted on the mixed methodology approach to clarify other aspects of teaching competency in Iranian context and develop valid and reliable checklists to rate medical faculty teaching competency.

Research Limitations

Small number of participants and selecting them from the same university limit the generalizability of the research

finding. The use of a larger sample of faculty from several major universities is suggested to avoid this limitation.

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