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Explaining the factors in the formation and improvement of professional interactions of faculty members

Background: Faculty members, as the most important elements in universities, play an important role in realizing the goals and missions of universities and higher education institutions. Establishing interaction and professional communication among faculty members is one of the important topics. The purpose of this study was to explain the factors influencing the professional interactions of faculty members.

Method: The present study was a qualitative research. The semi-structured interview was used for data collection. The participants in the study were 12 faculty members and 5 students who were selected by purposive sampling. The interviews continued until data saturation was reached. The text of the interviews was analyzed by the thematic analysis using the method of Braun and Clark (2006).

Results: Based on the analysis of the data, 6 main themes and 25 sub-themes were obtained. The main themes included "individual factors", "human relations", "faculty professionalism", "the importance of side studies", "contextual factors", and "organizational factors".

Conclusion: The results of this study indicated the affective factors on the professional interactions of faculty members from the perspective of faculty members and students. It is suggested that universities of medical sciences use the results of this study to create and improve the professional interactions of their faculty members.

Key words: Faculty, Qualitative Research, Student, Interaction, Collaboration

شرح عوامل تکوین وتحسين التفاعلات المهنية لأعضاء هيئة التدريس

الخلفية: يلعب أعضاء هيئة التدريس، باعتبارهم أهم عناصر الجامعات، دوراً مهماً في تحقيق أهداف ومهام الجامعات ومؤسسات التعليم العالي. يعتبر إقامة التفاعل والتواصل المهني بين أعضاء هيئة التدريس من الموضوعات المهمة. كان الغرض من هذه الدراسة هو شرح العوامل المؤثرة في التفاعلات المهنية لأعضاء هيئة التدريس. **المنهج:** الدراسة الحالية بحث نوعي. تم استخدام المقابلة شبه المنظمة لجمع البيانات. كان المشاركون في الدراسة 12 عضواً من أعضاء هيئة التدريس و 5 طلاب تم اختيارهم عن طريق أخذ العينات الهادفة. استمرت المقابلات حتى الوصول إلى تشبع البيانات. تم تحليل نص المقابلات من خلال التحليل الموضوعي باستخدام طريقة Braun and Clark (2006).

النتائج: بناءً على تحليل البيانات، تم الحصول على 6 مواضيع رئيسية و 25 موضوعاً فرعياً. وتضمنت الموضوعات الرئيسية "العوامل الفردية"، و "العلاقات الإنسانية"، و "احتراف هيئة التدريس"، و "أهمية الدراسات الجانبية"، و "العوامل السياقية"، و "العوامل التنظيمية".

الخلاصة: أشارت نتائج هذه الدراسة إلى العوامل المؤثرة في التفاعلات المهنية لأعضاء هيئة التدريس من منظور أعضاء هيئة التدريس والطلاب. يُقترح أن تستخدم جامعات العلوم الطبية نتائج هذه الدراسة لإنشاء وتحسين التفاعلات المهنية لأعضاء هيئة التدريس بها.

الكلمات المفتاحية: أساتذة، بحث نوعي، طالب، تفاعل، تعاون

تبیین عوامل شکل گیری و بهبود تعاملات حرفه‌ای اعضای هیأت علمی

زمینه و هدف: اعضای هیأت علمی به عنوان یکی از عناصر مهم در دانشگاه‌ها نقش مهمی در تحقق اهداف و مأموریت‌های دانشگاه‌ها و مؤسسات آموزش عالی ایفا می‌کنند. ایجاد تعامل و ارتباط حرفه‌ای بین اعضای هیأت علمی یکی از موضوعات مهم است. هدف این پژوهش تبیین عوامل مؤثر بر تعاملات حرفه‌ای اعضای هیأت علمی می‌باشد.

روش: پژوهش حاضر یک تحقیق کیفی بود. از مصاحبه نیمه‌ساختار یافته برای گردآوری داده‌ها استفاده شد. شرکت‌کنندگان در پژوهش 12 نفر از اعضای هیأت علمی و 5 نفر دانشجوی بودند که به روش نمونه‌گیری هدفمند انتخاب شدند. انجام مصاحبه‌ها تا رسیدن به اشباع داده‌ها ادامه یافت. متن مصاحبه‌ها به شیوه تحلیل مضمون به روش براون و کلارک (2006) مورد تجزیه و تحلیل قرار گرفت.

یافته‌ها: از تحلیل داده‌ها، 6 مضمون اصلی و 25 مضمون فرعی به دست آمد. مضامین اصلی «عوامل فردی»، «مناسبات انسانی»، «حرفه‌ای‌گری هیأت علمی»، «اهمیت مطالعات جانبی»، «عوامل زمینه‌ای» و «عوامل سازمانی» بودند.

نتیجه‌گیری: یافته‌های این پژوهش، بیانگر عوامل مؤثر بر تعاملات حرفه‌ای اعضای هیأت علمی از دیدگاه اعضای هیأت علمی و دانشجویان است. پیشنهاد می‌شود دانشگاه‌های علوم پزشکی از این مطالعه برای ایجاد و بهبود تعاملات حرفه‌ای اعضای هیأت علمی خود استفاده کنند.

واژه‌های کلیدی: هیأت علمی، پژوهش کیفی، دانشجو، تعامل، همکاری

فیکلٹی ممبران کے پیشہ ورانہ تعاملات کی تشکیل اور بہتری کے عوامل کی وضاحت

پس منظر: فیکلٹی ممبران، یونیورسٹیوں میں سب سے اہم عناصر کے طور پر، یونیورسٹیوں اور اعلیٰ تعلیمی اداروں کے اہداف اور مشن کو حاصل کرنے میں اہم کردار ادا کرتے ہیں۔ فیکلٹی ممبران کے درمیان بات چیت اور پیشہ ورانہ مواصلات کا قیام ایک اہم موضوعات میں سے ایک ہے۔ اس مطالعے کا مقصد فیکلٹی ممبران کے پیشہ ورانہ تعاملات کو متاثر کرنے والے عوامل کی وضاحت کرنا تھا۔

طریقہ: موجودہ مطالعہ ایک معیاری تحقیق تھا۔ نیم ساختہ انٹرویو ڈیٹا اکٹھا کرنے کے لیے استعمال کیا گیا تھا۔ مطالعہ میں حصہ لینے والے 12 فیکلٹی ممبران اور 5 طلباء تھے جنہیں مقصدی نمونے کے ذریعے منتخب کیا گیا تھا۔ انٹرویوز اس وقت تک جاری رہے جب تک کہ ڈیٹا سیچوریشن تک نہ پہنچ جائے۔ انٹرویوز کے متن کا براؤن اور کلارک (2006) کے طریقہ کار کا استعمال کرتے ہوئے موضوعاتی تجزیہ کے ذریعے تجزیہ کیا گیا۔

نتائج: ڈیٹا کے تجزیے کی بنیاد پر، 6 مرکزی تھیمز اور 25 ذیلی تھیمز حاصل کیے گئے۔ مرکزی موضوعات میں "انفرادی عوامل"، "انسانی تعلقات"، "فیکلٹی پروفیشنلزم"، "سائیڈ اسٹڈیز کی اہمیت"، "سیاق و سباق کے عوامل"، اور "تنظیمی عوامل" شامل تھے۔ **نتیجہ:** اس مطالعہ کے نتائج نے فیکلٹی ممبران اور طلباء کے نقطہ نظر سے فیکلٹی ممبران کے پیشہ ورانہ تعاملات پر اثر انگیز عوامل کی نشاندہی کی۔ یہ تجویز کیا جاتا ہے کہ میڈیکل سائنسز کی یونیورسٹیاں اس مطالعہ کے نتائج کو اپنے فیکلٹی ممبران کے پیشہ ورانہ تعاملات کو بنانے اور بہتر بنانے کے لیے استعمال کریں۔

کلیدی الفاظ: فیکلٹی، کوالٹیٹیو ریسرچ، طالب علم، تعامل، تعاون

INTRODUCTION

One of the problems of the higher education system is the lack of interaction between faculty members. Faculty members are known to be the most important pioneers of development in various societies because they play a key role in economic, social, cultural, and political development.

One of the most important duties of faculty members is teaching and learning, which is a relational process influenced by the interactions between students and faculty member, and these relationships affect student satisfaction and learning effectiveness (1). One of the characteristics of successful teaching is the strength of the interpersonal relationships that are established between students and teachers, the effectiveness that can have consequences for its success or failure (2). According to Wu et al., interaction or social relations refers to a wide set of verbal/non-verbal, direct and indirect, objective and symbolic communication between two or more people and forms the social structure (3). Chen and Hong stated that the members of the organization interact and communicate with each other based on trust, communication, and coordination (4). The nature of scientific communication that leads to the production of knowledge is basically an interactive process (5).

Interaction among faculty members is very important in such a way that it is considered one of the factors affecting their professional growth (6). The term student-faculty interaction refers to the broad set of experiences that a student encounters during college or university (7). The fostering of meaningful student-faculty interactions in higher education has concrete benefits for colleges and universities. Student-faculty interactions contribute to student persistence and retention (8).

Interactions between professors and students in higher education have the potential to influence and shape many aspects of teaching, learning, curricula, experiences, and student performance, but as a field of study, it has received little attention (9). Cuseo's (2018) students have reported that the interaction between students and professors inside and outside the classroom has affected their intellectual achievements, their choice of majors, and their satisfaction with university experiences (10). Students often interact with professors by asking questions and conversing before, during, and after lectures (11). Hagenauer & Volet, (2014) mentioned that student-faculty interactions also occur outside of the classroom, through casual conversations, collaborative work on research projects, tutoring, mentoring, office hours consulting, informal encounters on campus, or electronic communication (12).

The research findings showed three factors: 1. personal (personal skills, personality, professional position and scientific activities), 2. Organizational (laws and regulations, equipment and facilities), 3. Political (policy domestic policies and foreign policies) have an effect on scientific cooperation in the field of medicine (13). Choi and Kim (2020) stated that the existence of hierarchical relationships between students and professors is one of the barriers to interactions between them (14). In general, based on cultural

history, group discussions and interactions in society's culture are weak, and the lack of studies with a qualitative approach in this field is the reason for conducting this research. On the other hand, according to the mentioned materials, the present study was conducted with the aim of explaining the factors influencing the professional interactions of faculty members with students and peers in Iranian medical sciences universities.

METHODS

The present research was conducted with a qualitative method and with thematic content analysis strategy from the end of 2021 to the beginning of 2022 at the Aja University of Medical Sciences. A semi-structured interview tool was used to collect data. The main questions of the interview were realistic and the researcher wanted the interviewees to explain their views on the topic under investigation.

1- What is your understanding of the professional interactions of faculty members of the University of Medical Sciences?

2- What factors are effective in creating, improving, and increasing the professional interactions of faculty members?

Interviews were conducted with faculty members and medical students of universities of medical sciences, and sampling was done in a targeted manner. The criterion for entering the study was that faculty members had at least 3 years of teaching experience, and the criterion for entering the study was the end of the internship period. After conducting interviews with 17 participants, the present researchers reached theoretical data saturation. The duration of the interviews lasted about 35-50 minutes. All interviews were recorded and the text of each interview was typed word by word in word software. The steps of analyzing the texts of the interviews were carried out according to the 6-step method of Braun & Clarke (2006) (15). This step included: 1. Familiarity with data: Getting to know the data through multiple readings of the text from the interviews, 2. Generating primary codes: The extracted primary codes were either directly expressed in the conversations of the interviewees or were implicitly extracted by the researcher from the text of the interviews, 3. Search for themes: Classification of different codes in the form of selective codes, 4. Check out the themes: Reviewing at the level of coded summaries and then validating the sub-themes in relation to the data set, 5. Definition of themes: Themes were redefined and revised, 6. Final writing and analysis: Final analysis and report writing (Figure 1).

The validity and reliability of the data were confirmed using credibility, transferability, dependability, confirmability. Credibility of data was done through peer debriefing and the data reviewed by two experts in qualitative research. Member checking technique was also used.

After making the necessary arrangements and explaining the purpose of the research to the interviewee after agreeing to participate in the study, the purpose of the study was explained to the subjects and informed consent was taken. The name of the interviewee was removed due to ethical considerations and coded to the participants.

RESULTS

In this study, from the 17 participants in the interview, 12 were faculty members (7 women and 5 men) and 5 were students (4 men and 1 woman). Faculty members participating in the study were 7 professors, 3 associate professors, and 2 assistant professors. The understanding and definition of the faculty members who participated in the study are shown in Table 1.

Based on the data analysis, 184 basic themes, 25 organizing themes (sub-themes) and 6 overarching themes (main themes) were obtained as influencing factors on the interactions of faculty members with students and peers. The overarching themes (main themes) included “individual factors”, “human relations”, “faculty professionalism”, “the importance of side studies”, “contextual factors”, and “organizational factors” (Table 2).

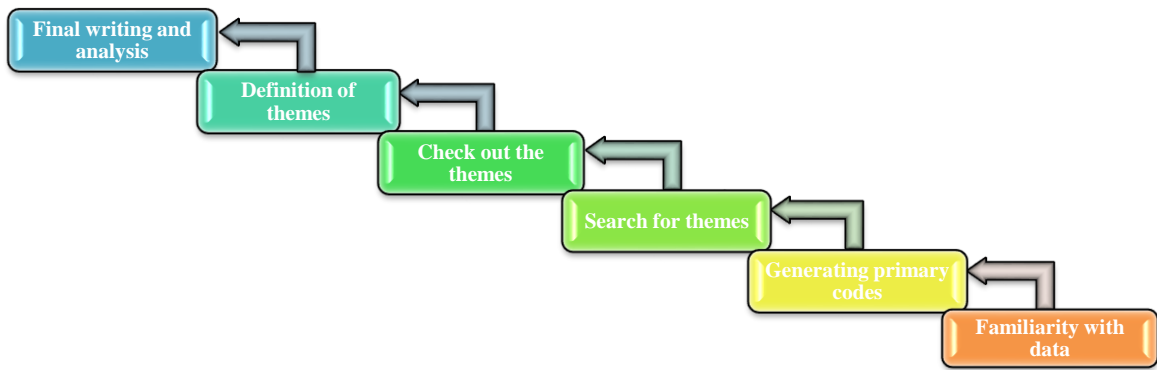


Figure 1. The steps Method of Braun & Clarke

Table1. Understanding and defining the faculty members participating in the study

Interviewee code	Faculty members' understanding and definition of interaction
1	Interaction is the communication that makes each of the elements to be put in its proper place in order to reach the educational goal.
2	In my opinion, interaction is the matrix and connective tissue of all social behaviors, including behaviors in the academic environment.
3	The set of standard communications are accepted by the institution, through which faculty members can pursue their professional activities and perform their duties correctly.
4	Professional interactions are the connections that every person in every profession and profession is in contact with.
5	A faculty member in medical sciences has relations and interactions or two-way communication with the surrounding environment and people and society and the organization she serves in the fields of education, research and dedicated services.
6	In my opinion, the interaction between professor and student is the heart of teaching and learning, and this interaction can create changes in the teaching process.
7	From the type of faculty member's clothing to the way of dealing with students, colleagues, university officials, even the university gatekeeper, in my view, professional interaction is considered.
8	The meaning of professional interactions is those actions and reactions that are formed between a member of the faculty member and other people in her work group in the shadow of her role and position.
9	Faculty members within the group should definitely interact with each other in the field of their profession, in the field of improving the quality of teaching, as well as communication with other universities and other people and international communication should definitely be in the field of the faculty member's work and interactions.
10	What actually shapes the interaction is the first goal, the goal behind the interactions of a faculty member usually has a scientific base.
11	Interaction is a kind of two-way communication that can have different definitions depending on environmental and contextual conditions. It also includes the interaction of faculty members with students and peers in the framework of academic and work issues in the classroom or outside the classroom.
12	Faculty interaction includes communication in terms of words, coverage, teaching style, dealing with students and ethics.

Table 2. Main themes and subthemes

Main themes	Sub-themes	Some of Primary codes (concept)
Individual Factors	Appearance features	Personal hygiene, Appearance and type,
	Personal identity	Gender, age, personal aspects, religious and religious differences, ethnicity,....
	Personality traits	Discipline, punctuality, emotional intelligence in interactions, the role of social intelligence,
	Motivational aspects	The professor's interest and love for the teaching profession, passion, energy, job satisfaction,
	Attitudinal and value aspects	Valuing students, The influence of beliefs, positive attitude to dialogue and interaction,...
	Excellent thinking skills	Ability to reason, have an open mind, Rethinking thoughts, rethinking behavior,...
Human Relations	Communication skill	Non-verbal skills, writing skills, Understanding the other person's body language, listening skills
	The skill of empathy	Empathy with students, colleagues and patients. Sympathy, worry, ...
	Adherence to ethics	Maintaining mutual respect in interaction, respect for principles and human dignity, non-judgement,...
	Being social	The spirit of professional. acceptance of social activities, social skills,
Faculty Professionalism	Professional growth	Scientific and academic behavior, professional behavior,
	Role model of professors	The role of being a model for the faculty, The effect of the hidden curriculum,....
	Mentoring professors	The effect of professors' guidance and counseling, the importance of professors' mentoring in interactions
The importance of side studies	The role of behavioral sciences and social sciences	The role of behavioral science, the effect of behavioral sciences and social sciences,
	The role of literature and religious sciences	The influence of rich Persian literature, Communication and integration of humanities and medicine,
	The role of e-learning knowledge and skills	knowledge related to technology, The role of media and virtual platforms,
	The role of medical education	management of the educational process, knowledge of learning theory,...
Contextual Factors	Cultural factors	attention to cultural sensitivity,
	Educational environment	The effect of environment on constructive interactions, constructive feedback,...
	Financial factors	The impact of material issues, economic issues,...
	Political factors	Knowledge of political issues, political context, political faction
Organizational Factors	The role of management-executive system	The role of managers and officials in improving and promoting professional interactions,...
	Organizational selection system	How to select faculty members, How to choose a student,...
	Organizational culture	Organizational Culture, the culture of the educational group,
	Policy making of organization	University policy, Upstream notified policies

Individual factors

The main theme of individual factors with 6 sub-themes was obtained as one of the main themes influencing the professional interactions of faculty members in this study (Table 2). Generally Individual factors such as personal identity, appearance, personality, metacognitive skills, motivation, belief and attitude of faculty members affect their relationships and interactions.

Interviewee code 2: "... from my point of view, there are intrapersonal and extra personal factors, it means that, if we consider everyone as the center of interaction, there are issues in his nature and personality that affect his interaction. Some of us are naturally positive, interactive,

structuring and constructive people and some of us have a destructive nature..."

Interviewee code 5: "...it is important to discuss the individual characteristics of people. People have generous personality types, profit seeking personality, and egalitarian personality. Undoubtedly, the position of faculty member in the ideal position is scientific generosity..."

Interviewee code 9 "one must have an open mind, he must have these values, he must have this skill..."

Human Relations

In this study, the sub-themes of human relations included

communication skill, the skill of empathy, adherence to ethics and being social (Table 2). One of the characteristics needed by professors is the ability to communicate effectively and communication skills and empathy. It is one of the other factors affecting the communication and interactions of ethics.

In this regard, interviewee code 6 stated: *"It is very important that the faculty members can communicate with their students and know how to communicate... see his student as a person who will be his colleague in the future and respect him ..."*.

Interviewee Code 9 *"... We must have the skill of speaking, the skill of explaining, it is very important for a person to have these skills...these skills should come in behavior.... I would have to show them in practice, all of these are in practice..."*.

Faculty professionalism

The main theme of faculty professionalism was obtained with 3 sub-themes (Table 2). The effective communication and interaction of the professor with students and peers depends on professional competence, scientific ability and being a role model.

Interviewee code 16: *"The word professor is a relationship beyond the teaching relationship. In addition to the scientific relationship and discussion and questions, the professor should be a model of behavior in interactions..."*

Interviewee code 2 *"For interaction, the academic staff needs to know both the theory of professionalism and professional behavior and be aware of the codes of ethics and behavior of his profession..."*

Interviewee Code 3 *"... we have professional characteristics that come from expertise. It means that everyone is trained in the curriculum in such a way that he is a representative of that profession, and in other words, he has his own profession..."*

The importance of side studies

In this study, the sub-themes of the importance of side studies included the role of behavioral sciences and social sciences, the role of literature and religious sciences, the role of e-learning knowledge and skills and the role of medical education (Table 2). Scientific interactions between faculty members lead to knowledge sharing between them.

Interviewee code 1 stated *"... the faculty should know both specialized knowledge related to practical content and knowledge of medical education and promotion knowledge for interactions. interaction is the communication that makes each of the elements of education to be placed in its proper place in order to reach the educational goal..."*

Interviewee code 2 *"Professors should also improve their literary ability in any language they teach and the English language, which is the world's scientific language. he must be able to use sentences, words, poems, quotes from hadiths, verses, everything and in interaction with students or peers, sometimes saying a line of poetry establishes communication and interaction much better than talking and explaining..."*.

Contextual factors

Another main theme affecting the professional interactions of faculty members obtained in this study was contextual factors with 4 sub-themes (Table 2). One of the important factors in human communication is context. The way people communicate is also affected by their culture.

Interviewee code 7 *"What is effective in these interactions is familiarity with cultures and subcultures. In my opinion, anyone who is a faculty member should at least be aware of political, economic, social, cultural and value issues and he should at least be aware of the usual developments of the day so that the interaction can be a proper interaction..."*

Interviewee code 17 *"... it is much better if the atmosphere of the university is friendly, that is, any professor whose class and teaching department have a friendly atmosphere, students were able to interact much more easily, both the professor and the student and the student's learning was much higher. ..."*

Organizational factors

The last main theme affecting the professional interactions of faculty members in this study was organizational factors with 4 sub-themes included the role of management-executive system, organizational selection system, organizational culture and policy making of organization (Table 2).

Interviewee code 10 *"...the manager should have a friendly relationship with his subordinate and it has a friendly and good atmosphere. Create a friendly atmosphere..."*

Interviewee code 4 *"... The first thing in people's awareness is that each person should have a precise and correct description of his organizational duties and goals. It means that he knows what his job is, what are his assigned duties, employees must know their duties..."*

Interviewee code 3 *"interactions strongly suggest the influence of rules and policies under the influence of organizational cultures and hidden curriculum that each person brings with him..."*

DISCUSSION

Based on results of this study, some important factors in the formation and improvement of communication and professional interactions included individual factors, human relations, faculty professionalism, importance of side studies, contextual factors and organizational factors, and 26 sub-themes. In this regard, the research results of Ayanbode et al. (2020) showed that student-teacher interactions have a positive effect on the satisfaction and academic progress of students (16). One of the factors influencing the interaction of faculty members with students and peers is personal factors including appearance characteristics, personal identity, personality characteristics, motivational aspects, attitudinal, the value aspects, and some skills. Ingraham (2018) has listed four main factors of relationships and interactions between students and professors: 1- support, 2- care, 3- gender diversity, and 4- communication skills (17).

Another individual theme affecting interactions in this study was motivational aspect, the results of Trolian's study (2022) have shown that teacher-student interaction leads to an increase in positive attitudes among students (18).

According to studies, continuous interactions between students and professors lead to an increase in academic motivation, career motivation, and an increase in the degree of satisfaction in the field of study (19,20). In a case study by Dwyer (2017), the positive effect of student-teacher interactions on student persistence and motivation has shown that weak relationships and limited interactions can be a factor in dropping out of school (21). Also, the results of a structural equation study have shown that students who interact more with faculty members tend to experience more gains in cognitive skills and participate more in critical reasoning (22).

Human relation was another influencing factor on professors' interactions with students and peers in this study. It is essential for a teacher to have communication skills for students to learn. Teachers need communication skills to facilitate student learning and achieve professional goals (23). Sparks (2019) has stated that cultivating empathy strengthens teacher-student relationships (24).

Faculty professionalism was another important factor in this study. The professional characteristics of a professor, including discipline and punctuality in meetings and classes, presenting materials in a logical manner and practical, observing the continuity of the contents, such scientific characteristics of the professor, including the up-to-date of the professor's knowledge and mastery of scientific concepts and educational rules, have the greatest impact on the effective communication between the student and the professor (25). New faculty members go through the process of socialization in the university through the process of interactions with peers and especially seniors, and these cooperative relationships affect on their satisfaction and success in their professional path (26).

In this study, one of the factors affecting on interaction was the importance of side studies in interactions. According to the results of Haghighi et al.'s research (2015), the learning and teaching style of professors leads to strengthening and improving interactions (27). On the other hand, training provided through group discussions, active learning, such as collaborative and cooperative group activities, group work, and student-centered educational approaches favors student-teacher interactions and student participation (28). Student-teacher interactions in the classroom can be enhanced with student-centered teaching and learning activities to foster participation (29).

Another factor in this study was contextual factors. Social and cultural characteristics of people, and social class and reputation of people are among the factors affecting communication. Cody (2017) stated that cultural mistrust reduces the full interaction of students with professors (30). Hoffman has pointed out the significant role of various fields on the type of interactions between students and professors and their development (31). The educational context, which is made by the behaviors and attitudes of professors, has a significant impact on students'

learning and participation. Because it is inside the classroom that faculty members have the chance to encourage students to participate inside and outside the classroom (32). The political orientation of faculty members is mentioned as one of the issues related to the interaction of faculty members and students (33).

The last main theme in this study was organizational factors. In a meta-synthesis review study, one of the factors influencing the interactions of faculty members was the management factor with three subcategories of policy and laws, support access, and economic capital (34). The importance of the institution's policy, structure and financial affairs is in creating a culture that gives value and importance to the extracurricular interactions of professors and students (35).

One of the limitations of qualitative research is the low generalizability of the results. There was another limitation, like other qualitative studies in data content analysis, because this stage is the mental interpretation of researcher, to overcome this limitation by the peer check.

In this study, the effective factors on the professional interactions of faculty members with students and peers in universities of medical sciences were explained. Considering the role and importance of professional interactions of faculty members in the development and expansion of knowledge, professors can take steps to guide and improve this process by considering these effective factors in establishing communication with students and peers. Designing classrooms in a way that encourages more interaction and participation, and designing challenging curricula based on practical activities, due to their special nature, lead teachers and students to more interaction in the classroom. It is also recommended to hold empowerment training workshops in the field of communication skills and professional ethics for professors and students to create and improve interactions.

Ethical considerations

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. The ethics committee of the National Agency for Strategic Research in Medical Education approved this research.

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