

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_1602_21

Identifying the factors affecting on interaction of faculty member: A meta-synthesis

Mojgan Mohammadimehr, Jamal Haji¹

Abstract:

BACKGROUND: The ability to interact and communicate effectively is one of the factors affecting the performance of faculty members, which is considered one of their basic competencies. The purpose of this study was to identify the factors affecting on interaction of faculty member with student and colleague, through the synthesis of literature.

MATERIALS AND METHODS: The research method was qualitative with a meta-synthesis approach. Meta-synthesis was performed with Sandelowski and Barroso method. After the research of databases in the period 1995–2021, 259 studies were collected and finally 48 sources were selected and were included in the analysis phase. Coding method was used to analyze the data.

RESULTS: Analyzing the findings of previous researchers and synthesizing the results, 155 codes, 18 subcategories, and 6 categories were identified and validated through kappa coefficient. The categories included “emotional-cognitive factor,” “sociocultural factor,” “communication factor,” “professional factor,” “educational factors,” and “management factor.”

CONCLUSION: Based on the findings of this study and the importance of faculty members’ interactions in medical universities, it is recommended that university officials and administrators use the results of this study to provide a suitable platform for creating and strengthening these interactions through holding workshops.

Keywords:

Faculty, qualitative research, social interaction

Introduction

Faculty members are one of the main elements in higher education and universities. They are the most important factors in achieving educational goals.^[1] Faculty members are the most important factor in rebuilding education.^[2] Interaction is a kind of two-way communication, which requires constant exchange and transitions. In this type of communication, the person initiates messages and each message affects the other message.^[3] Interactions of a faculty member including group relationships, collaborations, and face-to-face social or scientific-research interactions inside

and outside the workplace, research collaborations between faculty members, membership and participation in scientific associations, faculty members’ desire for collective activities, and professional and nonprofessional meetings are outside the workplace.^[4] Student–faculty interaction is actually the quality of communication between student and faculty.^[5] Faculty–student interaction has been mentioned as one of the influential factors on the quality of teaching in the classroom.^[6] Communication between educator and student has the potential to improve the learning experience. Interaction is simply the transfer of information from one person to another, or a group to another person. Effective communication is the

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Mohammadimehr M, Haji J. Identifying the factors affecting on interaction of faculty member: A meta-synthesis. *J Edu Health Promot* 2022;11:343.

Department of Laboratory Sciences, Faculty of Paramedicine, Aja University of Medical Sciences, Tehran, Iran,
¹Education Development Center, Aja University of Medical Sciences, Tehran, Iran

Address for correspondence:

Dr. Mojgan Mohammadimehr,
Department of Laboratory Sciences, Faculty of Paramedicine, Aja University of Medical Sciences, Tehran, Iran.
E-mail: mojanmehr20@yahoo.com,
m.mohammadimehr@ajaums.ac.ir

Received: 31-10-2021
Accepted: 11-01-2022
Published: 31-10-2022

process of exchanging ideas, thoughts, knowledge, and information in a way that fulfills the goal or purpose in the best possible way.^[7] Therefore, interaction of faculty member in educational organizations is so important that one of the purposes of creating a university is social interaction of individuals with each other, which leads to the production and transfer of knowledge as well as updating the scientific information of the audience.^[8] The results show that the interaction between the student and the faculty successfully mediated the effects between the factors of student participation and students' academic achievement.^[9] Moon states that attention to interactions in universities and the relationship between different units inside and outside the organization, coherent interaction, and the sustainability of different academic departments is important and university administrators should seek to create appropriate contexts for interpersonal and group interactions.^[10]

Rampai and Sopeerak believe that the quality and extent of professors' interactions with students is one of the important factors in students' success in acquiring the necessary competencies.^[11] Li and Yang have shown that interaction of faculty–student has an important impact on students' self-efficacy in the flipped classroom in university.^[12] Kim and Lundberg have stated that interaction between faculty and students leads to greater academic participation and increased critical reasoning skills among students, which in turn can improve the quality of the university.^[13]

Yaghoubi *et al.* have been in a research study, although the master's scientific and knowledge proficiency is an important factor, but from the results of a systematic study and the perspective of experts, we can point to the greater importance of interaction and establishing a sincere relationship with the student as one of the important factors in motivating and academic achievement of students.^[14] Sattari states that paying attention to the power of communication component creates a friendly and interactive environment and there is no discrimination in the classroom.^[15] The results of studies in Iran indicate the weakness of communication and interaction structure among faculty members and the interactions are mainly limited to organizational structures and there is little outside interaction and cooperation.^[16]

Faculty members–students' interactions can influence students' orientation and investment in their academics' experience and shape future learning. Interactions offer great value to both students and educators. Considering the importance of faculty members' interactions, the aim of this study was to determine the factor affecting on interaction of faculty members with students and colleague by meta-synthesis method, because the meta-synthesis method compiles, integrates, and

interprets the findings of studies conducted in this field by producing more comprehensive findings in a specific subject area through a systematic approach, therefore offers a more complete perspective on understanding the subject. The novelty of the present study is due to the meta-synthesis on the phenomenon of “faculty interactions,” which has not been studied by reviewing published articles and sources.

Materials and Methods

Study design and setting

This study was applied in terms of purpose, qualitative in terms of data nature and analysis style, and documentary in terms of data collection method based on information. Accordingly, the published researches on the interaction of faculty members in valid scientific databases were scanned based on keywords and the most relevant studies were selected using a purposeful approach. Research data were collected and analyzed by met synthesis method. Coding method was used to analyze the data. This qualitative meta-synthesis study was performed by Sandelowski and Barros method [Figure 1]. Based on this method, the research steps are as follows: Step 1: set up research questions, Step 2: systematic review of literature, Step 3: search and select appropriate sources, Step 4: extraction of results, Step 5: analysis and integration of findings, Step 6: data quality control, and Step 7: present the findings.^[17] The purpose of using this method is specifically to compare, interpret, translate, and combine different frameworks. Meta-synthesis overview of the literature is not the subject matter and analysis of secondary data and primary data from selected studies but the analysis and interpretation of the findings of these studies for in-depth understanding.^[18] In the meta-synthesis, the ideas, mindsets, approaches, results, and findings of previous qualitative and quantitative researches are examined.^[19-21] Since meta-synthesis deals with qualitative data, so studies with qualitative methods such as interviews and systematic review and quantitative research such as correlation and survey that had qualitative results were examined.

Study participants and sampling

First, the research question was designed. The statistical population in this study were research resources (articles and dissertations) that were selected using the keywords interaction, faculty members, collaboration through search in databases Science Direct, Google Scholar, Eric, ProQuest, Magiran, Noormags and SID. The period 1995–2011 was used for English sources and 1385–1400 for Persian sources.

Data collection tool and technique

Inclusion criteria were studies that reported sufficient information about the purpose, and exclusion criteria

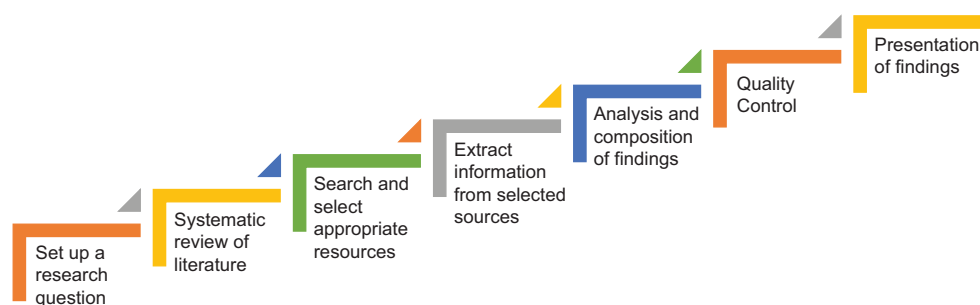


Figure 1: Stages of meta-synthesis

were studies that were not accessible. The selection of appropriate research and resources were done based on screening according to the relevance of the title, abstract, and text with the main research question. The evaluation of the quality of research at this stage was done by the Critical Appraisal Skills Program (CASP) consisting of 10 questions. The questions focus on the following: 1. research objectives, 2. method logic, 3. research design, 4. sampling method, 5. data collection, 6. reflectivity, 7. ethical considerations, 8. accuracy of data analysis, 9. clear expression of findings, 10. value research. For each study, a score of 1–5 was assigned to each question in terms of having the above characteristics. At this stage, the researcher assigned a quantitative score to each of these questions, and then created a form and assigned the scores assigned to each article. Rubric CASP 50-point scale, included excellent (41--50), very good (40-31), good (30-21), average (11--20), and poor (10-0).^[22] After determining the final sources, the findings of the studies were carefully reviewed and the codes of each were extracted. In the fifth step, the extracted codes were classified based on the frequency and similarity of the categories and concepts. After establishing the desired category, the extracted codes were given to another person to control quality and maintain reliability. In the sixth step, the results were reviewed by the observer and then the resulting category was compared with the previous category and evaluated using Cohen's kappa index. In addition, peer check strategy and the use of qualitative research experts were used to validate the data. In the seventh step, the codes were presented in the form of categories and concepts.

Ethical considerations

In all stages of the present study, the ethical principle of fidelity has been observed in citing sources and using their results. This research has the code of research ethics committee number 985033

Results

In this section, the results of each step of this analysis have been presented separately.

Step-1: Set up research questions. Meta-composition analysis begins with a question about identifying the nature of the research topic, and before starting the next steps of the research, it defines its general framework. The questions of this research are listed in Table 1 at this stage.

Step 2: Systematic review of literature. In meta-synthesis analysis, secondary data (evidence and documents) are used to collect information, which in this study included all the available research related to the interaction of faculty members, which were obtained through the databases mentioned in the previous step with the initial review of the 14190 titles of research sources obtained from the databases, after removing the sources unrelated, 259 research sources remained that were subjected to the screening process [Figure 2].

Step 3: The selection of appropriate research and resources. In the present study, at this stage, by considering parameters such as title, abstract, content, accessibility, quality, and research method, 259 research studies on faculty interactions were evaluated and finally 48 research studies were selected. [Figure 2] Accordingly, research studies with a score of <30 were excluded. Based on the screening results, 48 studies including 10 English dissertations, 24 English articles, and 14 Persian articles were used as selected sources.

Step 4: Extraction results. In the this stage, Selected and finalized researches (articles and dissertations) were studied in order to obtain the selected and regular finding and key findings of the selected sources were extracted.

Step 5: Analysis and integration of findings. In this study, at this stage, using the open coding method, the findings obtained in the previous stage of the study were coded. Based on the open coding of the findings obtained from 48 selected research studies, 203 open codes were extracted, of which 155 open codes were related to the factors affecting on interactions of faculty members with students and colleagues and 48 open codes related to the outcomes of faculty members' interactions with students and colleagues. After classifying open source, 18 axial codes (concept) and 6 selective codes (categories)

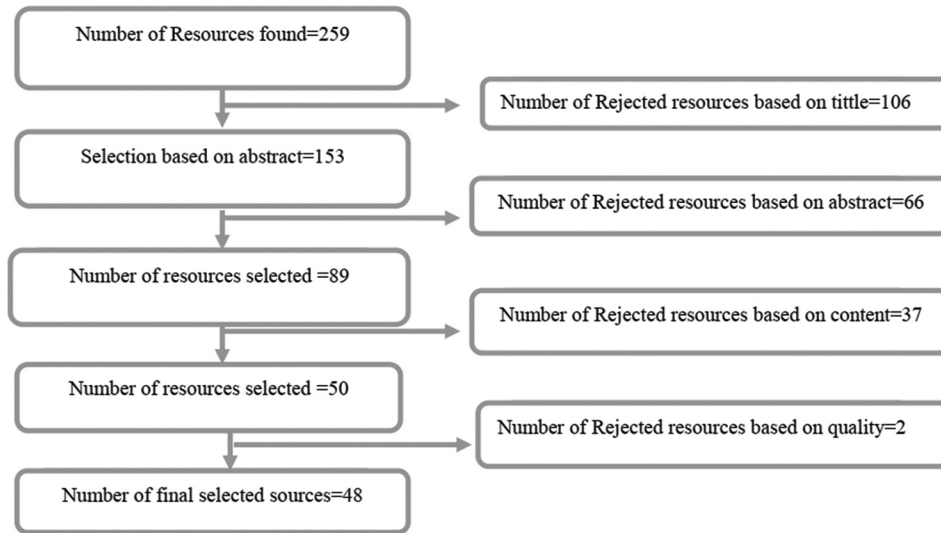


Figure 2: The process of selecting research studies

were identified as the factors affecting on interaction of faculty member [Table 2] and also 8 axial codes (concept) and 2 selective codes (categories) were identified as the outcomes of faculty member' interaction [Table 3]. The pivotal codes and sources of code extraction are given in Tables 4 and 5.

Step 6: Data quality control. At this stage, an attempt was made to follow and carry out the research steps accurately and correctly. For this purpose, the process of self-review, coding, and identification of concepts was performed again to minimize possible problems and biases. The kappa value fluctuates between 0 and 1. In this study, the kappa index was calculated to be 0.89, since the obtained reliability coefficient is more than 0.60 and indicates agreement between the browsers, therefore, the reliability of the coding was confirmed.

Step 7: Presentation of the results. At this stage, the findings of the research are presented. Based on the frequency of open codes obtained in this study, the factors affecting the interactions of faculty members are listed in Figure 3. the communication factor with 36 open codes as the most important factor in terms of frequency, followed by the emotional-cognitive factor (32 open codes), sociocultural factor (30 open codes), management factor (21 open codes), educational factor (20 open codes), and professional factor (16 open codes) were effective on interaction of faculty members. In addition, the individual outcome theme had 39 codes and the organizational outcome theme had 9 open codes.

Discussion

Based on the findings of this study, emotional-cognitive factor, sociocultural factor, communicational factor, educational factor, management factor, and professional

Table 1: Research questions-meta-analysis

Indicators	Research questions
What	What are the factors affecting on interaction between faculty member, student, and colleague?
Who	What is the study population to identify the factors affecting on interaction of faculty member?
When	In what period of time were the above factors investigated and searched?
How	What method has been used to provide the studies?

Table 2: Categories and subcategories of the factors affecting on interaction of faculty member

Professional factor	Professional knowledge
	Professional skills
Communication factor	Communication skill
	Technology
	Ethics
Sociocultural factor	Social origin
	Cultural attitude
	Cultural capital
	Sociocultural activities
Management factor	Politics and rules
	Support-access
	Economic capital
Emotional-cognitive factor	Belief-attitude
	Motivational
	Metacognition
Educational factor	Educational methods
	Context-environmental
	Educational facilities and resources

factor were obtained as the factors affecting on interactions of faculty members with students and colleagues. Furthermore, individual outcome and organizational outcome were defined as the outcomes of faculty member' interaction with students and colleagues. One of the factors affecting the interactions

in this study was the emotional-cognitive factor with subcategory including belief-attitude, motivation, metacognition, In this regard, Livingston emphasizes that alignment of interactions with individual values and beliefs is important in interaction, and faculty interest in scientific activity and work is effective in having scientific interaction with colleagues.^[5] Another category as an affecting factor on the interactions of faculty members in this study was the sociocultural factor with sub categories including social origin, cultural attitude, cultural capital and sociocultural activities in this study [Table 2]. It is no secret that cultural similarities and differences affect the level of interaction of individuals in all organizations, including educational organizations, and paying attention to this factor can help individuals

Table 3: Categories and subcategories of the outcomes of faculty member' interaction

Organizational outcome	Individual outcome
Social capital	Educational achievement
Student retention	Academic welfare
Improving the quality of the university	Psychological well-being
	Lifelong learner training
	Professional development of the faculty

Table 4: Axial codes related to the factors affecting on the interactions of faculty member

Codes	References
Belief-attitude	Livingston (2011), ^[23] Lynn (2008), ^[24] Cox and Orehovec (2007), ^[25] Roastami-Nasab <i>et al.</i> (2020), ^[26] Haghghi <i>et al.</i> (2015), ^[27] Ghaneirad (2006), ^[28] Soltani <i>et al.</i> (2020), ^[29] Nazarzadeh Zare <i>et al.</i> (2016), ^[30] Einarson and Clarkberg (2004), ^[31] Komarraju <i>et al.</i> (2010), ^[32] Vianden (2009), ^[33] Choi and Kim (2020) ^[34]
Motivational	Livingston (2011), ^[23] Lynn (2008), ^[24] Nazarzadeh Zare (2018), ^[4] Ahmadi <i>et al.</i> (2015), ^[35] Komarraju <i>et al.</i> (2010), ^[32] Nazarzadeh Zare <i>et al.</i> (2016), ^[30] Alderman (2008), ^[36] Boylan (2017), ^[37] Cejda and Hoover (2010), ^[38] Vianden (2009), ^[33] Cotton and Wilson (2006) ^[39]
Metacognition	Nazarzadeh Zare <i>et al.</i> (2016), ^[30] Nazarzadeh Zare <i>et al.</i> (2016) ^[40]
Social origin	Neville (2011), ^[41] Kim and Sax (2009), ^[42] Soltani <i>et al.</i> (2020), ^[29] Ingraham <i>et al.</i> (2018), ^[43] Cox <i>et al.</i> (2010), ^[44] Vianden (2009) ^[33]
Cultural attitude	Cody (2017), ^[45] Nazarzadeh Zare <i>et al.</i> (2016), ^[30] Nazarzadeh Zare <i>et al.</i> (2016) ^[40]
Cultural capital	Cox and Orehovec (2007), ^[25] Bagheri Heidari (2014), ^[46] Roastami-Nasab <i>et al.</i> (2020), ^[26] Nazarzadeh Zare <i>et al.</i> (2018), ^[4] Navah <i>et al.</i> (2012), ^[47] Ahmadi <i>et al.</i> (2015), ^[35] Nazarzadeh Zare <i>et al.</i> (2016), ^[30] Nazarzadeh Zare <i>et al.</i> (2016) ^[40]
Sociocultural activities	Roastami-Nasab <i>et al.</i> (2020), ^[26] Ghaneirad (2006), ^[28] Navah <i>et al.</i> (2012), ^[47] Alderman (2008), ^[36] NikooNezhad and Zamani (2014) ^[48]
Communication skill	Ross (2013), ^[49] Ghaneirad (2006), ^[28] Hoffman (2014), ^[50] Ahmadi <i>et al.</i> (2015) ^[35] Nazarzadeh Zare <i>et al.</i> (2016), ^[30] Ingraham <i>et al.</i> (2018), ^[43] Einarson and Clarkberg (2004), ^[31] Nazarzadeh Zare <i>et al.</i> (2016), ^[40] Alderman (2008), ^[36] Ghadami <i>et al.</i> (2007), ^[51] Lynn (2008), ^[24] Sagayadevan and Jeyaraj (2012), ^[52] Abdolahpour <i>et al.</i> (2017), ^[53] Zolfagharian <i>et al.</i> (2018), ^[54] Sobhaninejad and Ahmadi (2013), ^[55] Ghaneirad (2006), ^[28] Hoffman (2014), ^[50] Cox <i>et al.</i> (2010), ^[44] Komarraju <i>et al.</i> (2010), ^[32] Fuentes <i>et al.</i> (2014) ^[56]
Technology	Aylwin (2019), ^[57] Hoffman (2014), ^[50] NikooNezhad and Zamani (2014) ^[48]
Ethics	Ross (2013), ^[49] Denise <i>et al.</i> (2020), ^[58] Neville (2011), ^[41] Sobhaninejad and Ahmadi (2013), ^[55] Haghghi <i>et al.</i> (2015), ^[27] Ghaneirad (2006), ^[28] Soltani <i>et al.</i> (2020), ^[29] Ahmadi <i>et al.</i> (2015), ^[35] Komarraju <i>et al.</i> (2010), ^[32] Alderman (2008), ^[36] Abedini <i>et al.</i> (2013), ^[59] Ghadami <i>et al.</i> (2007), ^[51] Moradi <i>et al.</i> (2020), ^[60] Tolabi (2010) ^[61]
Professional knowledge	Ross (2013), ^[49] Nazarzadeh Zare (2018), ^[4] Navah <i>et al.</i> (2012), ^[47] Soltani <i>et al.</i> (2020), ^[29] Ahmadi <i>et al.</i> (2015), ^[35] Einarson and Clarkberg (2004), ^[31] Nazarzadeh Zare <i>et al.</i> (2016), ^[40] Abedini <i>et al.</i> (2013), ^[59] Cejda and Hoover (2010), ^[38] Moradi <i>et al.</i> (2020) ^[60]
Professional skills	Ross (2013), ^[49] Sagayadevan and Jeyaraj (2012), ^[52] Haghghi <i>et al.</i> (2015) ^[27] Nazarzadeh Zare (2018), ^[4] Navah <i>et al.</i> (2012), ^[47] Ahmadi <i>et al.</i> (2015), ^[35] Nazarzadeh Zare <i>et al.</i> (2016), ^[30] Nazarzadeh Zare <i>et al.</i> (2016), ^[40] Abedini <i>et al.</i> (2013), ^[59] Ghadami <i>et al.</i> (2007), ^[51] Cejda and Hoover (2010), ^[38] Moradi <i>et al.</i> (2020) ^[60]
Educational methods	Henry <i>et al.</i> (2020), ^[62] Lynn (2008), ^[24] Aylwin (2019) ^[57] , Abdolahpour <i>et al.</i> (2017), ^[53] Zolfagharian <i>et al.</i> (2018), ^[54] Roastami-Nasab <i>et al.</i> (2020), ^[26] Ghaneirad (2006), ^[28] Nazarzadeh Zare <i>et al.</i> (2016), ^[40] Cejda and Hoover (2010) ^[38]
Context-environmental	Roastami-Nasab <i>et al.</i> (2020), ^[26] Sobhaninejad and Ahmadi (2013), ^[55] Nazarzadeh Zare <i>et al.</i> (2018), ^[4] Ghaneirad (2006), ^[28] Hoffman (2014) ^[50]
Educational facilities and resources	Neville (2011), ^[41] Zolfagharian <i>et al.</i> (2018), ^[54] Ghaneirad (2006), ^[28] Soltani <i>et al.</i> (2020), ^[29] Moradi <i>et al.</i> (2020), ^[60] Cotton and Wilson (2006) ^[39]
Politics and rules	Cox and Orehovec (2007), ^[25] Nazarzadeh Zare <i>et al.</i> (2018), ^[4] Soltani <i>et al.</i> (2020), ^[29] Ahmadi <i>et al.</i> (2015), ^[35] Nazarzadeh Zare <i>et al.</i> (2016), ^[40] Moradi <i>et al.</i> (2020) ^[60]
Support and access	Juarez (2017), ^[63] Livingston (2011), ^[23] Denise <i>et al.</i> (2020), ^[58] Cox and Orehovec (2007), ^[25] Abdolahpour <i>et al.</i> (2017), ^[53] Roastami-Nasab <i>et al.</i> (2020), ^[26] Haghghi <i>et al.</i> (2015), ^[27] Nazarzadeh Zare (2018), ^[4] Hoffman (2014), ^[50] Soltani <i>et al.</i> (2020), ^[29] Ingraham <i>et al.</i> (2018), ^[43] Komarraju <i>et al.</i> (2010), ^[32] Alderman (2008), ^[36] Fuentes <i>et al.</i> (2014), ^[56] Vianden (2009), ^[33] Choi and Kim (2020), ^[34] Cotton and Wilson (2006) ^[39]
Economic capital	Juarez (2017), ^[63] Cox and Orehovec (2007), ^[25] Abdolahpour <i>et al.</i> (2017), ^[53] Nazarzadeh Zare (2018) ^[4]

Table 5: Axial codes related to the outcomes of faculty member’ interaction

Codes	References
Educational achievement	Ross (2013), ^[49] Mok (2013), ^[64] Henry <i>et al.</i> (2020), ^[62] Aylwin (2019), ^[57] Sagayadevan and Jeyaraj (2012), ^[52] Neville (2011), ^[41] Abdolahpour <i>et al.</i> (2017), ^[53] Zolfagharian <i>et al.</i> (2018), ^[54] Roastami-Nasab <i>et al.</i> (2020), ^[26] Haghghi <i>et al.</i> (2015), ^[27] Ghaneirad (2006), ^[28] Hoffman (2014), ^[50] Hagenauer and Volet (2014), ^[65] Ingraham <i>et al.</i> (2018), ^[43] Kim and Lundberg (2016), ^[13] Cejda and Hoover (2010), ^[38] NikooNezhad and Zamani (2014), ^[48] Kerdpon (2009), ^[66] Cotton and Wilson (2006) ^[39]
Academic welfare	Ross (2013), ^[49] Neville (2011), ^[41] Zolfagharian <i>et al.</i> (2018), ^[54] Ghaneirad (2006), ^[28] Hoffman (2014), ^[50] Komarraju <i>et al.</i> (2010), ^[32] Vianden (2009) ^[33]
Psychological well-being	Mok (2013), ^[64] Henry <i>et al.</i> (2020), ^[62] Denise <i>et al.</i> (2020), Neville (2011), ^[41] Zolfagharian <i>et al.</i> (2018), ^[54] Roastami-Nasab <i>et al.</i> (2020), ^[26] Ghaneirad (2006), ^[28] Jarecke (2020), ^[67] Hagenauer and Volet (2014), ^[65] Komarraju <i>et al.</i> (2010), ^[32] Boylan (2017), NikooNezhad and Zamani (2014), ^[48] Vianden (2009) ^[33]
Lifelong learner training	Kim and Lundberg (2016), Juarez (2017), Bagheri Heidari (2014), Zolfagharian <i>et al.</i> (2018) ^[54] , Neville (2011), ^[41] Roastami-Nasab <i>et al.</i> (2020), ^[26] Sobhaninejad and Ahmadi (2013), ^[55] Hoffman (2014), ^[50] Boylan (2017), ^[37] Noorshahi (2014) ^[68]
Professional development of faculty member	Sobhaninejad and Ahmadi (2013), ^[55] Boylan (2017), ^[37] Noorshahi (2014) ^[68]
Social capital	Kim and Lundberg (2016), Roastami-Nasab <i>et al.</i> (2020), ^[26] Boylan (2017), Fuentes <i>et al.</i> (2014), ^[56] Noorshahi (2014) ^[68]
Student retention	Kim and Lundberg (2016), ^[13] Cox and Orehovec (2007), ^[25] Roastami-Nasab <i>et al.</i> (2020), ^[26] Ghaneirad (2006), ^[28] Hoffman (2014), ^[50] Jarecke (2020), ^[67] Hagenauer and Volet (2014), Komarraju <i>et al.</i> (2010), ^[32] Cejda and Hoover (2010) ^[38]
Improving the quality of university	Zolfagharian <i>et al.</i> (2018), ^[54] Sobhaninejad and Ahmadi (2013), ^[55] Hagenauer and Volet (2014), ^[65] Abedini <i>et al.</i> (2013) ^[59]

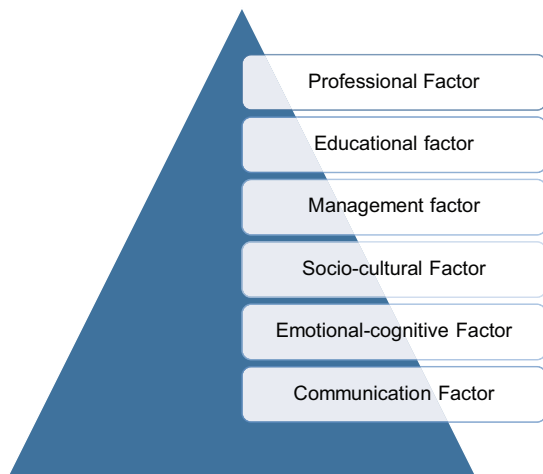


Figure 3: The factors affecting on interactions of faculty member based on frequency

to create more constructive interactions. Consistent with this study, Paulette’s findings suggest that variables such as students’ gender, ethnicity, and classification affect the extent to which they interact with professors.^[2] The findings of Sagayadevan and Jeyaraj study highlighted the importance of emotional interaction in increasing learning outcomes in students.^[52]

The communicational factor was another affection factor on the interactions with the subcategory of communication skills, technology, and ethics [Table 2]. Communication skills can help faculty members interact constructively with others in their work environments. Education for survival requires communication, and a better understanding of communication skills is essential in advancing and achieving goals and meeting

needs. Consistent with these findings, interaction and communication between students and professors and cooperation between classmates are important factors in student satisfaction.^[69] Professional ethics and communication skills are important factors in the international collaboration of academic researchers.^[60] One of the affecting factors on faculty members’ interactions was the professional factor with subcategory (professional knowledge and professional skills) [Table 2]. According to this category, the knowledge and skills of faculty members in their jobs and specialized fields affect their interactions. Efforts to develop knowledge and skills can expand the range of their interactions with peers and students. In this regard, student–faculty interactions can be very important in developing students’ academic self-concept and increasing their motivation and achievement.^[70]

The educational factor with the subcategory including educational methods, context-environmental and educational facilities, and resources was another affecting factor on the interactions of faculty members with student and colleagues in this study [Table 2]. Lynn mentions interactive learning and active learning methods, such as group learning and collaborative learning as a motivating factor for establishing and improving student interaction.^[24] Also, team learning and knowledge management lead to increased innovation and accountability of people in the university.^[71] Equipment and facilities and scientific activity are influential factors in faculty members’ interactions.^[60]

The last factor influencing the interactions of faculty members was the management factor with three

subcategories including politics and rules, support-access, and economic capital [Table 2]. Consistent with this study, Wilson *et al.* in their study concluded that factors such as student support by teacher, teacher availability, and mutual respect between teacher and student have a positive effect on the behavioral and emotional interaction between teacher and student.^[69] In the study of Mohammadimehr and Mirmoghtadaie, one of the important components in student support in the virtual learning environment to achieve academic success is interactive support. In this study, while emphasizing the importance of student interactions with the teacher, it is recommended to manage, organize, and develop interactions through platforms and social networks and e-learning tools.^[72]

In the present study, two categories were obtained as the outcomes of faculty members' interactions. One of these categories was the individual outcome with 5 sub categories included educational achievement, academic welfare, psychological well-being, lifelong learner training, and professional development of faculty member. Another category was the organizational outcome with subcategories including social capital, student retention and improving the quality of university [Table 3]. Kim and Ludnberg have pointed out that faculty–student interaction has many consequences, including increased learning of subjects, development of students cognitive skills, academic self-esteem, and increased students' sense of belonging to the educational institution.^[13] Hoffman has stated that the impact of faculty interaction with students on academic achievement, intellectual growth, personal growth, and student retention in the university is effective.^[50] Noorshahi emphasizes that faculty members' interactions with peers have important consequences, including accelerating their socialization process at the beginning of service and increasing their satisfaction and success along the way to becoming a professional.^[68] Jarecke in a research study concluded that student–teacher interactions lead to retention and satisfaction among college students.^[67] Formal and informal conversations and interactions between faculty members- students can support new and creative ideas.^[73]

Limitation and recommendation

This study, like other meta-synthesis studies, has limitations including the process of searching that did not allow access to the full text of some sources which were excluded from the study. 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. It is recommended that researchers study the interactions of faculty–students and colleagues through other qualitative approaches such as phenomenological studies or ethnography with respect to the impact

and role of context in creating and strengthening interactions in their university. It is also suggested that the relationship between the factors affecting faculty members' interactions with other related components such as students' academic achievement be investigated through quantitative studies, including structural equations. In addition to qualitative studies, it is recommended that in medical universities, quantitative studies be conducted by designing a valid questionnaire that includes the categories that affect the interactions of faculty members and students and colleagues.

Conclusion

Faculty members are one of the most important elements and factors in the growth and development of universities and higher education. Undoubtedly, interactions in universities and institutions of higher education and among its elements are of great importance. Researchers have also confirmed this issue and stated that in addition to education and research, one of the most important issues in universities is the existence of social interactions between people.^[8] According to the results of this study, regarding the consequences of faculty members' interactions, it is appropriate for university officials and administrators to pay attention to the factors affecting faculty members' interactions in this study and provide a suitable platform for improving interactions of faculty member with students and colleagues in the university environment. It is suggested that the managers of higher education institutions and universities, by formulating policies and providing appropriate facilities, support the flow of favorable interactions between faculty members with peers and students. The policies of higher education universities in Iran should be formulated in such a way as to provide a basis for increasing interactions and communication between faculty members and students. Faculty members and student professors are encouraged to pay attention to the results of this study and consider them in their interactions in order to create and improve interactions. It is recommended that faculty members pay attention to the beliefs, attitudes, and cultural differences of their students and peers in their interactions, and understand and use the subtleties and skills of human communication. It is suggested that workshops on communication skills, professional ethics, and education be held in order to strengthen the necessary capabilities to establish appropriate and dynamic interaction between faculty members–students and other colleagues in universities.

Acknowledgments

This project was supported by the National Agency for Strategic Research in Medical Education, Tehran, Iran. We appreciate the research deputy of this center. This research has the code of research ethics committee number 985033.

Financial support and sponsorship

This project was funded by the National Agency for Strategic Research in Medical Education, Tehran, Iran, Grant No. 985033.

Conflicts of interest

There are no conflicts of interest.

References

- Haghighi M, Charabin M, Akbari A, Karim M. Assessing the educational quality of professors and the factors influencing it. A systematic study. *J Crit Rev* 2020;7:3419-26.
- Navabi N, Jahanian I, Haji Ahmadi M, Parvaneh M. Criteria for a desirable teacher from the view point of students Babol University of medical sciences. *J Babol Univ Med Sci* 2010;12 Supp 1:7-13.
- Hoy W, Miskel C. *Educational Management: Theory, Research and Practice*. 9th ed. New York: McGraw Hill Education; 2012.
- Nazarzadeh Zare M. Identifying barriers to international faculty interactions: A qualitative approach. *Educ Sci J Educ Sci Psychol* 2018;6:179-96.
- Kuh GD. The national survey of student engagement: Conceptual and empirical foundations. *N Dir Inst Res* 2009;141:5-21.
- Creemers BP, Kyriakides L. *The Dynamics of Educational Effectiveness. A Contribution to Policy, Practice and Theory in Contemporary Schools*. New York, NY & London, UK: Routledge Taylor & Francis Group; 2008.
- Alawamleh M, Al-Twait LM, Al-Saht GR. The effect of online learning on communication between instructors and students during COVID-19 pandemic. *Asian Educ Devt Stud* 2020;2046-3162.
- Moghadasi Z, Arasteh H, Navehebrahim A, Zeinabadi HR. Interactions at Farhangian University: Contexts, strategies and guidelines. *Res Teac Educ* 2020;3:113-33.
- Yueh-Luen H, Chao-Hsiang H, Gregory S C. Student-faculty interaction: Mediating between student engagement factors and educational outcome gains. *Int J Res Stud Educ* 2015;4:43-53.
- Moon B. *Do Universities have a Role in the Education and Training of Teachers? An Analysis of Policy and Practice*. Cambridge: Cambridge University Press; 2016.
- Rampai N, Sopeerak S. The development model of knowledge management via web based learning to enhance pre- service teacher's competence. *Turk Online J Educ Technol* 2011;10:249-54.
- Li L, Yang Sh. Exploring the influence of teacher-student interaction on university students' self-efficacy in the flipped classroom. *J Educ Learn* 2021;10:84-90.
- Kim YK, Lundberg CA. A Structural model of the relationship between student-faculty interaction and cognitive skills development among college students. *Res High Educ* 2016;57:288-309.
- Yaghoubi M, Salimi M, Karamali M, Ehsani-Chimeh E. Factors affecting the evaluation of teachers by systematic and Delphi methods in the military university in Tehran. *J Mil Med* 2019;21:251-61.
- Sattari S. Assessment of effective teaching, components based on the students' viewpoints. *Res Curriculum Plan* 2014;10:134-46.
- Ghaneirad MA, Khosrokhavar F. The mentalities of basic sciences leading researchers about the scientific community in Iran. *Iran High Educ* 2011;3:7-34.
- Sandelowski M, Barros J. *Handbook for Synthesizing Qualitative Research*. New York: Springer Publishing Company Inc; 2007.
- Bench S, Day T. The user experience of critical care discharge: A meta-synthesis of qualitative research. *Int J Nurs Stud* 2010;47:487-99.
- Suri H, Clarke D. Advancements in research synthesis methods: From a methodologically inclusive perspective. *Rev Educ Res* 2009;79:395-430.
- Bair CR. *Meta-Synthesis. Proceedings of the 24th Annual Meeting of the Association for the Study of Higher Education (ASHE)*; 1999 November 18-20; San Antonio, Texas; 1999.
- Strobel J, Barneveld A. When is PBL more effective? A meta-synthesis of meta-analyses comparing PBL to conventional classrooms. *Interdiscip J Probl Based Learn* 2009;3:44-58.
- Finfgeld DL. Met synthesis: The state of the art so far. *Qual Health Res* 2003;13 (7):893-904.
- Livingston J. *Defining and measuring faculty engagement: Validation of the Faculty Engagement Survey*. [Dissertation]. Azusa, California: Azusa Pacific University; 2011.
- Lynn AN. *Effect of Academic Content Academic Content first-year Seminars on student Engagement in the Institutional Social System*. [Dissertation]. Eisenhower Parkway: Illinois State University; 2008.
- Cox BE, Orehovec E. Faculty-student interaction outside of class: A typology from a residential college. *Rev High Educ* 2007;30:343-62.
- Roastami-Nasab H, Soltani A, Fazilat-Pour M. Faculty-student interaction and its relationship with development of students' cognitive skills. *Stud Learn Instr* 2020;11:1-20.
- Haghighi SH, Rokhafroz D, Sayadi N. The study of the interaction effects between students and instructors from Shushtar nursing students' perspective. *Future of Med Educ J* 2015;5:20-4.
- Ghaneirad MA. The role of students – Teachers relationships in formation of Academic social capital. *Iran J Sociol* 2006;7:3-29.
- Soltani A, Boostani D, Golestani S. Exploring the strategies of faculty-student interactions: A grounded theory study in Iranian academic context. *Learn Culture Soc Interact* 2020;26:1-13.
- Nazarzadeh Zare M, Pourkarimi J, Abili Kh, Zakersalehi Gh. Presenting a pattern for faculty members' competency in the international engagements: A phenomenological study. *J Sci Technol Policy* 2016;8:25-38.
- Einarson MK, Clarkberg ME. *Understanding Faculty Out-of-Class Interaction with Undergraduate Students at a Research University*. Proceeding of the Annual Meeting of the Association for the Study of Higher Education in Kansas City, MO; November 5, 2004.
- Komaraju M, Musulkin S, Bhattacharya G. Role of student-faculty interactions in developing college students' academic self-concept, motivation, and achievement. *J Coll Stud Dev* 2010;51:332-42.
- Vianden J. Exploring college men's perceptions about interacting with faculty beyond the classroom. *Coll Stud Aff J* 2009;27:224-41.
- Choi BK, Kim MS. The student-faculty interaction beyond the formal curriculum in South Korea. *High Educ Q* 2020;00:1-16. [doi: 10.1111/hequ. 12261].
- Ahmadi E, Osareh F, Heydari GH. Identification and analysis the motivating and inhibiting factors of scientific collaboration of faculty members in Local, National and International Levels in Shahidchamran University and Jundishapur University of Medical Sciences in Ahvaz. *Health Inform Manag* 2015;12:183-93.
- Alderman RV. *Faculty and Student out-of-Classroom Interaction: Student Perceptions of Quality of Interaction*. [Dissertation]. College Station, Texas: Texas A&M University; 2008.
- Boylan MB. *The Impact of Learning Communities on Student and Faculty Engagement: The Case for Linking College Success and Basic Skills ENGLISH Courses at "A" Community College*. [Dissertation]: Glassboro, New Jersey: Rowan University; 2017.
- Cejda BD, Hoover RE. Strategies for faculty-student engagement: How community college faculty engage Latino students. *J Coll Stud Retent Theory Pract* 2010;12 (2):135-53.
- Cotton SR, Wilson B. Student-faculty interactions: Dynamics and determinants. *High Educ* 2006;54:487-519.
- Nazarzadeh Zare M, Pourkarimi J, Abili KH, Zaker Salehi GH.

- Competences of faculty members in the international interactions. *Rahyaft* 2016;26:1-19.
41. Neville KM. *The Individual and Shared Meanings Students Make of their Diverse Interactions with African American Faculty: A Phenomenological Study*. [Dissertation]: Boston, Massachusetts: University of Massachusetts Boston; 2011.
 42. Kim YK, Sax LJ. Student-Faculty interaction in research universities: Differences by student gender, race, social class, and first-generation status. *Res High Educ* 2009;50:437-59.
 43. Ingraham KC, Davidson SJ, Yonge O. Student-faculty relationships and its impact on academic outcomes. *Nurse Educ Today* 2018;71:17-21.
 44. Cox BE, McIntosh KL, Terenzini PT, Reason RD, Lutovsky Quaye BR. Pedagogical signals of faculty approachability: Factors shaping faculty-student interaction outside the classroom. *Res High Educ* 2010;51:767-88.
 45. Cody BL. Fragmented exchanges: The impact of cultural mistrust on student faculty interaction in a predominantly white university. *J Pan Afr* 2017;11:3-15.
 46. Bagheri Heidari F. A study on the effective factors on the students' communication in some Iranian universities. *Iran J Sociol* 2014;15:153-71.
 47. Navah A, Rezadoost K, Pour Tarkarouni M. Evaluation of sociological factors affecting students' interactions and relationships with faculty members. *Q J Res Plan High Educ* 2012;18:25-41.
 48. Nikoonezhad S, Zamani BE. Comparison between interaction and social presence of students enrolled in actual and virtual programs in terms of demographic factors and academic achievement. *J Appl Sociol* 2014;25:119-43.
 49. Ross JM. *The Student-Faculty Relationship: An Investigation of the Interactions between Students and Faculty* [Dissertation]. Erie, Pennsylvania: Gannon University; 2013.
 50. Hoffman EM. Faculty and student relationships: Context matters. *Coll Teach* 2014;62:13-9.
 51. Ghadami A, Salehi B, Sajadi Sh, Naji H. Students' points of view regarding effective factors in establishing communication between students and faculty members. *Iran J Med Educ* 2007;7:149-53.
 52. Sagayadevan V, Jeyaraj S. The role of emotional engagement in lecturer-student interaction and the impact on academic outcomes of student achievement and learning. *J Scholarsh Teach Learn* 2012;12:1-30.
 53. Abdolahpour H, Soltani A, Esmi K. External interactions of student-teacher based on educational behaviors and professional activities of faculty members. *J Iran High Educ* 2017;9:133-52.
 54. Zolfagharian M, Amin Beidolhti A, Jafari S. Structural relationship of faculty-student interaction and faculty's active teaching method with students' competencies development by mediating the knowledge acquisition. *J Res Educ Syst* 2018;12:183-206.
 55. Sobhaninejad M, Ahmadi M. The comparison of teachers' views about theoretical and clinical curriculum of faculty of medical sciences of Shahed University. *J Med Educ Dev* 2013;6:11-23.
 56. Fuentes MV, Alvarado AR, Berdan J, DeAngelo L. Mentorship matters: Does early faculty contact lead to quality faculty interaction? *Res High Educ* 2014;55:288-307.
 57. Aylwin C. Faculty and student interaction in an online master's course: Survey and content analysis. *JMIR Med Educ* 2019;5:e10464.
 58. Denise MW, Summers L, Wright J. Faculty support and student engagement in undergraduate engineering. *Journal of Research in Innovative* 2020;13:83-101. [doi: 10.1108/JRIT-02-2020-0011].
 59. Abedini M, Abassi A, Mortazavi F, Bijari B. The effective factors on the communication between students and faculty members from student's perspective in Birjand University of Medical Sciences. *Procedia Soc Behav Sci* 2013; 83:94-8.
 60. Moradi R, Zargham-Boroujeni A, Soleymani MR. Factors related to the international research collaboration in the health area: A qualitative study. *J Edu Health Promot* 2020;9:267.
 61. Tolabi Z. The relationship between ethical literacy, student-master interaction & psychological empowerment. *J Ethics Sci Technol* 2017; 12:112-20.
 62. Henry DS, Wessinger WD, Meena NK, Payakachat N, Gardner JM, Rhee SW. Using a Facebook group to facilitate faculty-student interactions during preclinical medical education: A retrospective survey analysis. *BMC Med Educ* 2020; 20:87.
 63. Juarez DR. *Creating an Environment of Success: Community College Faculty Efforts to Engage in Quality Faculty Student Interactions to Contribute to a First-Generation Student's Perception of Belonging*. [Dissertation]. Malibu, California: Pepperdine University; 2017.
 64. Mok DS. *The Impact of Student-Faculty Interaction on Undergraduate International Students' Academic Outcome*. [Dissertation]. Los Angeles: University of Southern California; 2013.
 65. Hagenauer G, Volet SE. Teacher-student relationship at university: An important yet under-researched field. *Oxf Rev Educ* 2014; 40:370-88.
 66. Kerdpon D. *Student Perceptions of Student Faculty Interactions and Academic Achievement in Undergraduate Dental Students at Prince of Songkla University*. [Dissertation]. Songkla, Thailand: Oklahoma State University; 2009.
 67. Jarecke S. *Student-Faculty Interactions as Predictors of Retention and Satisfaction among Generation Z College Students* [Dissertation]. South Dakota State, USA: South Dakota State University; 2020.
 68. Noorshahi N. Effective elements on professional development of faculty members and ways to improve it. *Q J Res Plan High Educ* 2014; 20:95-120.
 69. Wilson D, Summers L, Wright J. Faculty support and student engagement in undergraduate engineering. *J Res Innov Teach Learn* 2020; 13:83-101.
 70. Gray JA, DiLoreto M. The effects of student engagement, student satisfaction, and perceived learning in online learning environments. *Int J Educ Leadersh Prep* 2016; 11:1-20.
 71. Araei M, MohammadiMehR M. *The Mediating Role of Organizational Learning in the Relationship between Knowledge Management and Organizational Innovation (Case Study: Faculty Members of a Military University)*. *J Mil Med* 2020; 22:373-83.
 72. Mohammadimehr M, Mirmoghtadaie Z. Exploring the components of student support system in blended learning for Iranian Universities of Medical Sciences: A thematic analysis. *J Educ Health Promot* 2021; 10:130.
 73. Mohammadimehr M. Investigating the Status of Entrepreneurial University Indicators in the University of Military Medical Sciences in Corona Crisis. *J Mil Med* 2021; 23:349-357.