

Presenting Dynamic Empowerment Model for Education Principals of University of Medical Sciences: A Qualitative Study

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ABSTRACT

Objective and Aims: Principals of universities of medical sciences play a vital role in improving the quality of medical sciences education in these universities that are educational organizations that provide the workforce of the health system and their subsequent professional development. As a substantial factor, professional capability development that tends to pay attention to management and leadership in medical sciences education and dynamic empowerment model can present a guideline for current and upcoming professional development programs regarding managers and leaders training. The purpose of this study was to present a dynamic empowerment model for education principals of medical sciences.

Method: This qualitative study was conducted on Iran's university of medical sciences using thematic analysis during 2020. In this research, 25 education principals of medical sciences were chosen. The data were collected from semi-structured interviews then analyzed using contractual qualitative thematic analysis.

Findings: 723 initial were assigned to 59 conceptual codes that were divided into 21 subcategories and seven categories of dynamic empowerment of principals. The main categories included organizational factors development (4 subcategories), personal skills development (4 subcategories), information technology (1 subcategory), managerial factors and skills (4 subcategories), instructional leadership (5 subcategories), environmental factors (1 subcategory), and educational guidance (2 subcategories).

Conclusion: As a model for professional development programs of education principals in universities of medical sciences, seven categories of dynamic empowerment of education principals of medical sciences in this research can have positive outcomes regarding the quality improvement of medical education. The highest number of mentioned codes was associated with the development of instructional leadership skills; it means that it is essential to hold empowerment courses to improve the leadership skills of education principals.

Keywords: Dynamic Empowerment, Education Principals of Medical Sciences, Empowerment Model

INTRODUCTION

As managers can affect the behaviors of their staffs, they play a vital role in the organization and this effect can be seen in the executive process of the organization's mission, employees' behavior, and interaction with other organizations and society. Progress in sciences and technology has led to challenges for the skills and capabilities of organizations' managers so that managers' competencies should be restructured based on an organized and new plan in order to cope with such rapid changes. Therefore, successful management will not be achieved without continuous professional development in a changing environment [1]. Increased demands of beneficiaries for accountability and increased educational costs have made the university management a more sophisticated multidimensional issue. Therefore, management in current educational institutions is not just about administrating, organizing, monitoring, guiding, and maintaining discipline in the education environment [2]. Rather, instructional leaders and principals should have specific personal characteristics and professional skills to meet the growing needs of learners [3]. Despite having scientific authority, they do not have managerial capabilities because the weakness of educational principals in communicational skills, leadership, and management knowledge are challenges that educational principals may face [4], [5]. Moreover, managerial issues besides

organizational problems and organizational culture are three fundamental challenges that principals of universities of medical sciences may face [6]. There are also national and global concerns about educational principals' disabilities and studies show that principals have not received the required training and are not proficient enough to meet complicated today's needs [7]. Besides the mentioned problems, many studies not only described the lack of empowerment opportunities available for higher education principals but also examined the ironic involvement in teaching others while neglecting their professional needs [8], [9]. It is obvious that the lack of an efficient and appropriate system for human resource development in this sector leads to poor and inefficient services, lack of efficiency and effectiveness, lack of quality improvement, and society's health disintegration [10].

Various studies have emphasized the educational principals' empowerment and the gap existing in universities. For example, Short and colleagues conducted a study entitled "sustainable leadership" in colleges of Ohio and Colorado states and introduced education principals' empowerment as a process in which participants in educational environment improve their competencies, improve their professional development, and solve their problems [11]. Lieff and colleagues (2012) carried out a study entitled "practices and learning strategies of medical education leaders" considering the professional

development of medical education principals to determine their learning strategies. In this research, four components including 1) intrapersonal (e.g., self-awareness) 2) interpersonal (e.g., fostering informal networks) 3) organizational (e.g., creating a shared vision), and 4) systemic (e.g., strategic navigation) were considered to design professional empowerment strategies for medical education principals [12]. Schwinghammer and colleagues conducted on the empowerment of medical education principals and identified three types of managerial, leadership, and personal empowerments [13]. Swanwick and colleagues carried out a study entitled "faculty development for leadership and management" explaining that empowerment of management and leadership in medical education is a relatively new subject that has received less attention [14]. Savery and Lawson (2001) conducted a study in Australia and found a significant relationship between empowerment and managers' overcoming problems related to human force adjustment and maintenance of organization efficiency in the global situation. They explain that organizations have increased individuals' ability to cope with stress by using empowerment in the current decade. Accordingly, they have stabilized the organization's situation by keeping its efficiency [15]. Greasley and colleagues (2005) carried out a study on employees' perceptions of empowerment to measuring individuals' perceptions of empowerment. They believe that most previous studies have focused on principals' perspective of empowerment. The findings of this study indicated a gap between employees' experiences and what principals perceive and implement. Finally, the researchers concluded that individuals' opinions about empowerment and its effects on communications in the workplace should be studied [16]. Researchers have proposed some models to actualize the concept of empowerment; for example, Quinn and Spreitzer divided empowerment into two static and dynamic perspectives. It is believed based on the static perspective that empowerment is the delegation of decision-making within a clear framework. Accountability is delegated; hence, individuals are responsible for outcomes. Rather, empowerment is defined in a dynamic perspective as risk-taking, development, changes, understanding employees' needs, empowerment modeling for employees, teamwork, and encouraging cooperative behavior, stimulating intelligent risk-taking, and trusting individuals in the executive procedure. However, both static and dynamic perspectives may have defects [17]. Albert Bandura has conceptualized beliefs of self-efficacy and its role in personal empowerment feeling. Results of this study introduced a model that included four elements including Positive Emotional Support under work pressures and emotions, using positive incentives and encouragement, introducing successful individuals of the organization as role models, and actualization of real experiences of mastery in successful performance [18]. Continuous empowerment of leaders and managers of the organization leads to an increase in organizational commitment and emotional commitment of employees as well as an increase in sense of responsibility, reduction in absence from work, and rise in their productivity [19]. As a new subject, leadership and management empowerment is a

necessity in a dynamic workplace of leaders. Accordingly, dynamic management empowerment models should be designed based on the cultural conditions and features in every country [20]. It should be confirmed that although educational principals play a vital role in the realization of education quality, this goal can be achieved only by coping with internal and external challenges, which are the most critical challenges to their professional capabilities [21]. On the other hand, the pace of change, need of adaptability, and responsiveness to local conditions requires empowerments of managers to improve the quality of education based on new skills and method [22]. The significant point is how educational principals and leaders respond to organizational problems and conditions, which is an exclusive attitude while the educational environment is complicated. Hence, it is not predictable that whether a specific procedure can solve all problems and obstacles. In a turbulent environment, managers should read out the current situation and choose the most suitable response [23]. Therefore, empowerment programs should not be static because the nature of the educational environment is dynamic, and it is necessary to design a model for the empowerment of educational principals. If there was not any change, principals would have a simple task without having any planning. In this case, there is no difference between today and tomorrow, and there was not any need for adaptation in a stable environment. Besides, decision-making could be a simple process, as its consequence was predictable [24]. Hence, the empowerment procedure of principals cannot be considered as a regular predetermined process because many principals handle different situations with various methods. Furthermore, principals cannot remain principals if showing the same reactions to different conditions. As medical education is a sophisticated process in which treatments and new medical sciences are discovered and future generation of medical sciences is trained, it is essential to determine a career path, role, and empowerment process of principals of medical education within systems. Accordingly, such determination creates benefit for institutions and universities of medical sciences.

As mentioned, empowerment of education principals of medical sciences in universities of medical sciences is a substantial case that requires a model for their empowerment regarding features, conditions, specific fields of the medical education system. In this case, educational quality should be improved in universities of medical sciences. The required competencies can be determined by designing a dynamic empowerment model for education principals of medical sciences. The need-oriented and competency-based empowerment model guides the future professional development programs to educate principals and leaders in the field of medical sciences education.

METHOD

This research is a case study of Iran's universities of medical sciences that was conducted by using a qualitative approach to semi-structured interview with 25 education principals (then and present chairs), educational deputies of universities, managers of R&D centers of universities, educational heads, and deputies of faculties, and educational group managers of Iran's medical education

during 2020. The subjects entered the study after signing a consent letter. Purposive sampling was conducted and participants were interviewed based on a mutual semi-structured method to collect and generate data. The average time of the interview was about 35 minutes. The process of interviews continued until the data saturation so that there was not any new data from the 25th interview onwards. The research objective was explained to the participant before starting the interview, and the researcher asked a general question about components and items of empowerment of education principals of medical sciences. Then, exploratory, deep, and partial questions were asked regarding the research aim based on the viewpoints and responses of interviewees.

This kind of interview was used as the researcher aimed to ask open questions to find the perspectives and opinions of interviewees without limiting their beliefs and attitudes. The inductive content analysis method was employed for data analysis. In doing this, the script of the interview was recorded then was written on paper word-by-word. These scripts were used as the main research data. The extracted codes that were meanings of important expressions derived from participants' sentences were assigned to a category based on their similarities and context fit. Then, abstract themes and categories were extracted based on the comparisons between classes and subclasses [25]. To improve the quality of qualitative analysis and data classification, all steps of data analysis were done through MAXQDA10 Software. This approach to content analysis was conducted based on the following steps: 1) the relevant words were derived from the text 2) the concepts of words were extracted 3) proper labels were selected for codes 4) the codes were classified based on the differences 5) classifications were divided into larger significant clusters. To test the accuracy and trustworthiness of the study, Lincoln and Guba's Criteria were employed [26]. Regarding research credibility, not

only the researcher was engaged with data for a long time, but also peer review was employed to collect and analyze data. Regarding concept transferability, details of the extracted qualitative concepts were described to be applicable in universities of Iran and other countries. A clear description of the selection method, statistical features, data collection, and analysis data was presented to improve research transferability. In this case, the reader could judge the applicability of findings in other contexts. Furthermore, accurate data were proposed within appropriate quotations to expand the transferability of this study. An external researcher review besides participants' review and confirmation were employed regarding conformability. Moreover, the analysis procedure was approved by several professors. Participants took part in the study voluntarily with informed consent, and their information and expressions remained confidential regarding ethical considerations of research.

Findings: According to findings, 723 initial codes were extracted and compared within a repetitive process. After repeated referrals to and reviews of interviews, the number of obtained codes reached 59 initial conceptual codes after removing repetitive codes in the second coding step. In total, 21 subcategories and 7 main categories were obtained for the dynamic empowerment of principals. According to findings obtained from the inductive content analysis of interviews, dynamic empowerment of education principals of medical sciences was divided into seven dimensions of organizational factors development, personal skills development, information technology, managerial factors and skills, instructional leadership, environmental factors, and educational guidance. Characteristics of professional development dimensions and their components are reported in Table 1. These dimensions have been described herein.

Table 1. Components of dynamic empowerment if education principals of universities of medical sciences

Theme	Category	Subcategory	A sample of extracted codes
Components of dynamic empowerment	Organizational factors development	Assessment	Assessment knowledge- assessment method- principals' evaluation
		Meritocracy	Managerial knowledge and skill- rules and regulations in appointment-general knowledge and skill
		Exploration	Lifelong learning- exploration- managerial research
		Three-level empowerment	Personal empowerment- group empowerment- organizational empowerment
	Personal skills development	Problem-solving skill	Skill in solving problems
		Creativity and innovation	Creativity- novation
		Self-regulation	Self-management- personal skills- self-control
		Cognitive experiences	Managerial experience required for education principals- cognitive skills- mental skills
	Information Technology	Development of modern technologies	Developing virtual training- developing infrastructures of virtual training
	Managerial Factors and Skills	Financial intelligence	Financial management ability- understanding financial policies and management of financial sources of university
		Planning	Semi-general director- semi-educational director
		Human capital boost	Planning for manpower development boost- organizational management development- considering acting director- strategic leadership

	Instructional Leadership	Delegation of authority	Authority and autonomy- authority delegation skill
		Moral maturity	Ethical commitment- professional ethics
		Communication skills	Communication skills- negotiation skills- conflict resolution skills- organizational communications
		Incentive management	Skills in motivating individuals- motivational incentives
		Teamwork leading	Team building- teamwork management- team dynamics
	Leadership	Leadership method- instructional leadership skill- change leadership	
	Environmental Factors	Support	Psychological supports- financial support- organizational support
	Educational Guidance	Educational rules and structures	Being aware of educational rules and planning- structural and program-based knowledge of universities- mastering the managerial rules, directives, and regulations- a roadmap of education principal empowerment
		Medical education development	Medical education concepts- power of expertise- training principals- cognitive skills of education principal- the meaning of educational quality

Organizational factors development: This component is one of the categories of dynamic empowerment of education principals of medical sciences that consists of subcategories including assessment, meritocracy, exploration, and three-level empowerment.

Assessment: Findings obtained from data analysis indicated that interviewees believed that knowledge of associated principals' assessment method is one of the skills required for the development of abilities of an education principal of medical sciences. For example, interviewee no.6 explained, "assessment system should be based on their available possibilities so paper-based assessment is not an appropriate method to evaluate a principal since it is a test that is a difficult case. Assume that you aim to measure the outcome of the principal, it is not a simple procedure that takes a long time. However, there are some extra options such as whether the university president knows any foreign language or computer skills, and so on. These skills can be categorized and evaluated generally but the principal can be such a powerful person that can manage the system even if he/she does not have any acceptable competency. Therefore, they should know the assessment method and knowledge."

Meritocracy: The role of meritocracy in universities was one of the categories mentioned in interviews. Principals pointed to some options such as individual's managerial knowledge and skill, rules, and regulations of appointment, and having general skill and knowledge. For instance, interviewee no.22 stated, "When I am talking to many principals see that they even do not know the initial requirement of management and nobody has taught them these skills. While they are unskilled, they are appointed to a critical position. The principal or manager of a university or a part of the university may be skilled in a medical specialty but he/she may not be good at management. Hence, empowerment programs can teach them such managerial skills."

Exploration: Many participants talked about the necessity of exploration among education principals. They believed that a principal not only must be a researcher but also

should have lifelong learning and managerial exploration regarding various contexts.

"Principal of an educational system should be capable of knowledge and experience-based management and must have specialized knowledge and skill in the field of medical education in his/her relevant work scope. The other capabilities and skills are subsets of such specialties that the principal should know. An education principal should make decisions based on the evidence, so he/she should know the research method. The principal should be skilled in providing the field for progress through creative and innovative methods. The current era is the time of economy, so we should have new opportunities to compete based on our creativity and innovation. In doing this, we can use research." (Interview no.18)

Three-Level Empowerment: interviewees emphasized the necessity of empowerment of principals within different aspects regarding the expanded field of medical sciences education. This dimension of empowerment consisted of three categories of personal, group, and organizational empowerments. For example, interviewee no.18 explained, "group empowerment should also receive attention besides personal empowerment. Information sharing and accessibility to resources and amenities are two significant components of group empowerment, which can be both in-group and out-group. In in-group empowerment, group members share the scientific information about the group nature; they use existing amenities and resources to achieve the group empowerment and goal. In out-group empowerment, however, the university should prepare the required information and access to resources." Interviewee no.22 explained, "In open social and dynamic systems, universities of medical sciences should pay attention to empowerment at an organizational level too. When we consider university empowerment as an organization then different goals of employees, faculty members, and principals will be matched."

Personal Skills Development: This dimension of empowerment of education principals of medical sciences universities includes four components of problem-solving

skill, creativity and innovation, self-regulation, and cognitive experiences.

Problem-Solving Skill: Interviewees assumed that education principals should have problem-solving skills due to abundant decisions they should make at the management level. For instance, it was stated in interview no.3, "in universities of medical sciences, many decisions are made in different management levels and principals are always facing challenges and problems that must be solved. Therefore, they should be skilled in making decisions and solving problems."

Creativity and Innovation: Interviewees believed that education principals must have some skills such as creativity and innovation to improve the educational quality of the university. "Creativities and innovations are necessities for a principal, and it is an important case. Therefore, the common language should be created between principals and they should be skilled in this case." (Interview no.12)

Self-regulation: Self-regulation is one of the components affecting the dynamic empowerment of education principals of medical sciences from the perspective of participants. This component consists of three subcategories of self-management, personal skills. Interviewees believed that a successful education principal in the structure of medical sciences university must benefit from self-management skills. The principal should be aware of their needs and remove inefficiencies by self-learning. For example, Interviewee no.12 expressed, "If a person is metacognitive, such characteristic bring the person mastery of knowledge and learning. The person with such mastery can find their deficiencies in the role of education principal trying to use self-learning or self-directed learning methods." Interviewee no.19 explained, "It is an important case when principals control tensions and it is a managerial art that you not only respect others but also control them to keep time. A principal should manage his/her stress, as well. A principal should make a balance between his/her life and work; otherwise, the principal should leave the management job."

Cognitive Experiences: Participant assumed that principals should have cognitive experiences that include some subcategories such as managerial experience required for education principals, cognitive skills, and mental skills. "A principal should have the managerial knowledge and perception required for all managers who work in the educational management field. Regarding performance, a principal should be capable of applying the acquired knowledge and skills at work" (Interview no.22)

Information Technology: This dimension of dynamic empowerment of medical education principals includes a component of the development of modern technologies.

Development of Modern Technologies: Developing virtual training and developing infrastructures of virtual training are subcategories of this component, and principals have emphasized the vital role of modern technologies. In this case, interviewee no.3 stated, "in virtualization scope that is about the educational quality promotion, many good changes have occurred compared to three or four years ago. All education principals, particularly those who are group managers, are important individuals that should invest in their position. Such

principals should receive real-time in-service management training, not just participating in classic management courses then forgetting it. This process should be projected based on need and monitoring."

Managerial Factors and Skills: This dimension of dynamic empowerment of education principals of medical sciences consists of four subcategories of financial intelligence, planning, human capital boost, the delegation of authority.

Financial Intelligence: Principals believed that being intelligent in financial affairs is a significant case that contributes to goal achievement. Financial management ability, understanding financial policies, and financial resources management are necessary skills that principals should acquire. "Financial issues are other relevant cases. Although your considered principals do not need a high level of financial management skill, they should be skilled in budgeting and costing the operating budget as well as a financial audit. One of the options that I recommend managers is having thought of entrepreneurship and monetization. For example, I suggested principals providing health services that are funded by the private sector. Why they take money but do not give health services? They must have a financial perspective, and it is a substantial case. I assume that educators must design a financial program that makes money for them. Financial affairs are important although many disagree and introduce education as the main purpose of the university. They explain why they should think of money. Large universities have concluded that monetization is an underlying issue in universities. Monetization and saving should be taken into account at the same time and principals should have a financial perspective to entrepreneurship and militarization." (Interviewee no. 12)

Planning: Interviewees believed that planning skill is one of the required skills for the dynamic empowerment of education principals. They not only must plan non-educational issues and supportive education affairs, but also should consider educational planning. Interviewee no.14 stated, "The principal should be aware of scientific and technical issues of medical sciences education, if not, the principal should acquire such knowledge and plan it. Besides, the required skills, knowledge, and awareness should be learned by principals, and they should plan to achieve their educational goals."

Human Capital Boost: Interviewees emphasized the principals' capabilities in human resource management fields. This component consisted of three subcategories of planning for manpower development boost, organizational management development, considering the acting director, and strategic leadership. "It can be stated that education principals have an extensive work scope, so there are many items that exist for their empowerment. Human resource management is one of the key components, and the principal should provide the field to attract, employ, and promote employees and faculty members. Retention of faculty members, especially clinical faculty members is important. Some issues such as delegation of authority and monitoring performance of others can be named as components of human resource management." (Interviewee no.16)

Delegation of Authority: Interviewees believed that education principals should be free in delegating authority and must be skilled in this field. "I think that universities should be independent in many cases. They must have authority in accepting students, employing assistants, creating majors; otherwise, universities cannot be viewed with the same structure. As far as I am concerned, many universities have this authority; nevertheless, the ministry of education must not remind universities that they have authority but the ministry should monitor their educational output without issuing any instruction. In this case, they can design a program in which chief executors of logistic areas are empowered. It even better to empower each principal based on his/her competency, then delegate the authority to them. Heads of universities in north or south of the country have different needs, so they should be empowered differently." (Interviewee no.3)

Instructional Leadership: Interviewees had the most emphasis on this dimension of dynamic empowerment of education principals. This dimension consists of some components including leadership, moral maturity, communication skills, incentive management, and teamwork leading.

Leadership: Interviewees believed that ongoing changes in medical education indicate that education principals of medical sciences should be empowered in the leadership field. An education principal must own a leadership method and instructional leadership skill to not only create the culture of change acceptance by leading the process but also to be skilled in coping with obstacles. For example, interviewee no.15 stated, "a good principal must have some characteristics enabling him/her to be an influential manager. You know, universities differ from other organizations, and a person who tends to manage or lead a university cannot behave like a manager of a factory or other ordinary organizations. University is an academic place for science generation and learning, and your audiences are faculty members who are as educated as the chair of the university. Therefore, the principal of a university should be capable of leading such an atmosphere."

Moral Maturity: Interviewees assumed that education principals are always facing challenges to moral decision making that cause implications for many other individuals; hence, ethical and moral principles should be followed. For instance, it was explained in interview no.12, "I think that an education principal must be a role model and professional manager morally and ethically like his/her abilities and skills in other fields. An education principal makes a lot of decisions that affect students, faculty members, and other university staff. Therefore, it is essential to be aware of moral requirements."

Communication Skills: interviewees emphasized that principals must have powerful communication skills in intra- and extra-organizational interactions. They believed that an education principal should be a good listener. "Listening is one of the personal skills of principal. Communication is an underlying factor and communicational skills should help managers with a different situation requiring analysis." (Interviewee no.5) It was mentioned in interview no.22, "Communicational abilities of principals are highly substantial. It means that interpersonal relationship skills

and social communication skills play a vital role in this case. Accordingly, principals will not be able to perform successfully if they cannot make a good relationship with their audiences."

Incentive Management: interviewees pointed to the abilities of education principals in implementing an appropriate incentive mechanism to promote and motivate faculty members, staff, and students. For example, it was stated in interview no.12, "Chancellors of universities and colleges, as well as deputies, should encourage their staffs by using incentive mechanisms including both positive (promotions) and negative (punitive) forms. The significant case is about organizational and psychological behaviors. This is a serious debate in management, and a principal should be skilled in encouraging personnel."

Teamwork leading: The interviewee assumed that teamwork takes a big part in universities so education principals should be empowered to project cooperation and teamwork management, and to keep group dynamics. For example, interviewee no.5 explained, "One of the underlying skills of managers is their ability in teamwork management in an intelligent mechanism. In doing this, the principal should find the needs of each deputy department and branch. The principal should form research or education teams based on collaborative methods. Principals must consider the preferences of individuals in teamwork groups."

Environmental Factors: This dimension of dynamic empowerment of education principals of medical sciences consists of one category of support.

Support: support was one of the empowerment options pointed by principals. This category included three subcategories of psychological support, financial support, and organizational support. Interviewee no.8 stated, "A principal who does not work in the ward loses some financial advantages, so it should be considered that they are not at the center of attention. Also, spiritual support is a more important issue. Now, based on their branches and responsibilities, many of them are working hard but their position has not been predicted in the organizational chart. Therefore, these principals do not benefit as much as advantages taken by persons who had been in the organizational chart while they work equally well."

Educational Guidance: This dimension of dynamic empowerment of principals includes two components of educational rules and structures and medical education development.

Educational Rules and Structures: according to this component, a principal should be aware of educational rules. The principal should be empowered regarding some subcategories such as being aware of educational rules and planning, structural and program-based knowledge of universities, mastering the managerial rules, directives, and regulations, and roadmap of education principal empowerment. For instance, interviewee no.9 stated, "approval and issuance of facilitating rules and directives can pave the way for the participation of principals and successful implementation of empowerment programs."

Medical Education Development: participants had an emphasis on medical education development among education principals. This component consisted of five subcategories including medical education concepts, power

of expertise, training principals, cognitive skills of education principal, the meaning of educational quality. For example, Interviewee no.11 stated, "An education principal or deputy should know medical education. I do not mean that that they must be aware of complicated and specialized meanings of medical education but these principals should know the generalities and philosophy of this education."

According to the interviews with experts and qualitative content analysis of data, the final conceptual model of dynamic empowerment of education principals of medical sciences was designed (Figure 1).

It is concluded that dimensions of dynamic empowerment of an education principal of medical sciences consisted of organizational factors development, personal skills development, information technology, managerial factors and skills, instructional leadership, environmental factors, and educational guidance. The highest number of extracted codes were related to instructional leadership, organizational factors development, managerial factors and skills, personal skills development, educational guidance, environmental factors, and information technology.

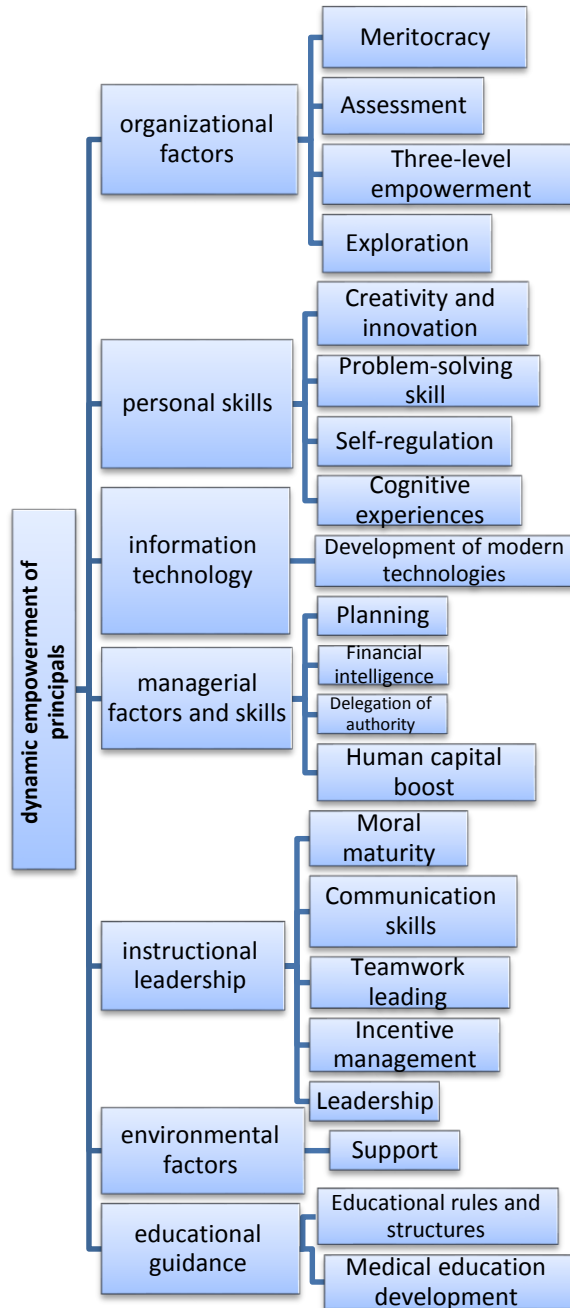


Fig 1. Model of dynamic empowerment of education principals of universities of medical sciences

DISCUSSION

Findings indicated that dimensions of dynamic empowerment of education principals of medical sciences were divided into seven categories.

The dimension of organizational factors was recognized based on the open codes. This dimension was divided into four subcategories of assessment, meritocracy, exploration, and three-level empowerment. Although there is not any foreign or Iranian study on this subject, the obtained results are in line with findings of some other studies conducted on skills, capabilities, knowledge, and competencies of principals of higher education and medical education. For instance, the component of exploration was matched with results of studies conducted by Sarchami and colleagues who studied professional competency, Bligh and colleagues, and Schuster and colleagues who examine the role of medical education managers [27, 28, 29]. Regarding the component of assessment, results were matched with research findings of the empowerment model of Boje and the conceptual model of Bagheri that introduced assessment as one of the components of principal empowerment [30, 31]. The dimension of personal skills points to some factors about the personal characteristics of educational principals. These skills included four components of problem-solving skill, creativity and innovation, self-regulation, and cognitive experience. The component of problem-solving skills was matched with results obtained by Kozlowski and colleagues who introduced group problem-solving skills as a skill needed for higher education principals. This component was also in line with results of studies conducted by Azemian and colleagues that introduced problem-solving and decision-making abilities as competencies and merits, and Dessell and colleagues who considered problem-solving as a skill required for medical education principal [32, 33, 34]. The component of creativity and innovation was in line with the results of studies conducted by Sarchami and colleagues that introduced innovation as a component of professional competencies of medical education principals [27]. Self-regulation that consisted of self-management, personal skills, and self-control was similar to the component introduced by Palmer and colleagues that named it emotional intelligence, which is an essential leadership competency for medical education principals [35].

Results obtained from qualitative analysis of interviews related to information technology indicated that IT is a set of skills and capabilities that education managers should have to recognize virtual education development methods and the development of infrastructures of virtual education. In the case of virtual training development, results were in line with findings obtained by Sarchami and colleagues who introduced management of virtual training affairs as professional competency of medical education principals [27].

Managerial factors and skills were divided into financial intelligence, planning, human capital boost, and delegation of authority. The component of financial intelligence was matched with results obtained by Brown and colleagues, Keim and colleagues, Aziz and colleagues, and Hendrickson that found financial and budgeting skills,

and role of financial audits among higher education managers [36, 37, 38, 39]. Moreover, the planning component was in line with the results of studies conducted by Brown and colleagues, Keim and colleagues that introduced planning skills as abilities needed for higher education managers [36, 37]. The component of human capital in this research was matched with results obtained by Keim and colleagues, who addressed the issue among higher education principals, and Sarchami, who studied medical education principals [27, 36]. There was not any study on the component of the delegation of authority.

The dimension of instructional leadership was recognized based on the open codes, which consisted of moral maturity, communication skills, teamwork leading, incentive management, and leadership. The component of moral maturity was in line with results obtained by Sarchami and colleagues who introduced this component as medical ethics development for professional competency of managers [27]. Findings of the present study indicated that education principals must have good communication skills that include negotiation skills, conflict resolution skills, and organizational communications. The other components of these skills including written communication in response to correspondence, verbal skill, promotion of informal networks, intra- and extra-organizational management, investment, and valuing communications were mentioned in other studies [40, 41, 42].

Written communication in response to correspondence, verbal skills, promotion of informal networks, internal and external management, and investment, and valuing communication. The component of teamwork leading was matched with results of studies conducted by Kozlowski and colleagues and Palmer et al. who addressed team building, leadership, and team development skills as skills needed for education principals [33, 35]. Regarding the component of incentive management, Crowder introduced incentive skill as a necessity for higher education principals [43]. In terms of leadership, the results were in line with findings obtained by Crowder and Hendrickson (higher education principals) and Sarchami and colleagues [27, 43, 39].

The component of environmental factors consisted of support emphasizing the vital role of psychological, financial, and organizational supports in dynamic empowerment of education principals of medical sciences. The psychological dimension of empowerment indeed is related to the behaviors improving and progressing managerial performance of the principal [44]. The dimension of educational guidance was recognized based on the open codes and converting them to the components of educational rules and structures and medical education development. The codes extracted from educational rules and structures included managers' ability in being aware of educational rules and planning, structural and program-based knowledge of universities, mastering the managerial rules, directives, and regulations, and roadmap of education principal empowerment. Ioannidou-Koutselini and Patsalidou (2015) also pointed to similar items in the

studies explain that such features should be developed to promote managers [45].

Regarding the component of medical education, the findings of the extant paper were in line with studies conducted by Bligh and colleagues and Schuster and colleagues who addressed the role of medical education principals [28, 29].

CONCLUSION

In this research, a conceptual model was designed for the dynamic empowerment of education principals of medical sciences. This model included organizational factors development, personal skills development, information technology, managerial factors and skills, instructional leadership, environmental factors, and educational guidance. Educational leadership skills included more codes compared to other dimensions; this indicates that empowerment courses can promote leadership skills of education principals. Hence, it is suggested to implement empowerment programs for education principals of medical sciences with an emphasis on components of educational leadership skills. Many interviewees were dissatisfied with their unpreparedness for the management role. Accordingly, it is recommended to design and implementing dynamic empowerment programs based on the need of managers for preparedness. Considering the important role of principals in the medical education system, principals' professional development model must be designed. Such a model can have positive consequences for medical education quality promotion of managers who have been appointed to this position without participating in specific courses.

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