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Assessment of leadership and professional behavior of educational managers in the complex and post-crisis era: perspectives of educators

Sara Jambarsang¹, Amir Houshang Mehrparvar² and Fatemeh Keshmiri^{3,4*}

Abstract

Objective The study aimed to evaluate educational managers from the viewpoints of stakeholders (educators and faculty officials) during two years of the COVID-19 pandemic and two years of the post-COVID era. This was a longitudinal study conducted from 2018 to 2023 in two phases: the first phase consisted of compiling and psychometric assessment of the tools for evaluation of educational managers in the two domains of leadership and professional behavior, and the second phase included evaluation of leadership behavior and professional behavior of university educational managers during four years. Descriptive indices were used to summarize the data. Exploratory factor analysis was used to extract the priority components in the two domains of professional behavior and leadership behavior of educational managers.

Results The validity of the tools was confirmed in the first step. Adherence to the principles of professionalism such as honesty and responsibility, and the use of management principles including constructive communication, monitoring, and evaluation during the crisis and post-crisis were highlighted by the educational managers. Implementing evaluation and providing feedback in complex and critical times in educational systems facilitates the achievement of the goals of the system and responding to the needs of the system.

Keywords Educational managers, Educational leadership, Professional behavior, Managerial performance, Epidemic, Educational crisis

Introduction

Educational leadership is a multifaceted and dynamic process that requires diverse strategies and tools to address the evolving needs of educational systems and the varied expectations of stakeholders [1]. During the COVID-19 epidemic as a crisis in education, the management of educational systems faced many ambiguities, complexity, and uncertainty [2]. During the epidemic, the education system faced crises including the following items: the development of educational technologies and virtual learning methods, changes in communication channels, changes in the culture of students and educators in the educational processes, working in a distance

*Correspondence:

Fatemeh Keshmiri

Drkeshmiri1400@gmail.com

¹ Center for Healthcare Data Modeling, Department of Bio-Statistics and Epidemiology, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

² Industrial Diseases Research Center, Department of Occupational Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

³ Department of Medical Education, Education Development Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

⁴ The National Agency for Strategic Research in Medical Education, Tehran, Iran



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learning environment, and the limitation of resources and capabilities [3, 4].

In the post-COVID era, educational managers needed to plan for curriculum change by focusing on resilience, change management, development of e-learning approaches, and transfer to digital systems [5]. In this complex situation, managers at different levels of the educational system needed to respond to the growing changes by using appropriate strategies [3, 6].

Torrance et al. emphasize the importance of fostering leadership capabilities and promoting formal and informal professional learning as key strategies for managing the complexities of educational systems, particularly in critical and challenging situations [6]. Camilleri et al., through a systematic review, highlight the need for educational managers to enhance collaboration among system members and stakeholders to address the challenges of evolving educational systems and improve educational quality, drawing lessons from crisis management during the pandemic [7]. Townsend proposes a targeted leadership model for pandemic contexts, structured across four levels, emphasizing individual management traits such as commitment, patience, and managerial skills, as well as team-level components like teamwork, goal setting, trust-building, and skill development [8]. Similarly, Habibi et al., through conceptual analysis, identify essential professional behaviors for university educational managers, including empathy, communication skills, teamwork, accountability, integrity, ethical risk-taking, and dedication to institutional advancement [9].

The COVID-19 pandemic has profoundly disrupted global education systems, reshaping the factors influencing educational leadership and necessitating a reevaluation of traditional management practices, particularly in the post-crisis era. This study employs a comparative framework to analyze leadership management factors from the perspectives of various evaluators, distinguishing between the crisis and post-crisis phases. It aims to identify which leadership components are prioritized during a crisis and which gain significance afterward. Understanding these priorities is essential for developing empowerment and evaluation programs to enhance the effectiveness of educational managers in critical periods. While research on educational leadership within medical science systems remains limited, further studies are recommended to address gaps and strengthen leadership practices in these specialized contexts.

This study evaluated educational managers from the viewpoints of stakeholders (educators and educational officials of the faculty). The leadership and professional behaviors of educational managers were evaluated over four years, including two years during the COVID-19 epidemic and two post-COVID years.

Methods

The current study was a longitudinal study conducted from 2018 to 2023. This study was done in two phases: 1. compiling and psychometric assessment of the evaluation tools in two domains of leadership behavior and professional behavior; 2. evaluating educational managers using the designed tools over four years.

Study setting

The study was conducted at Shahid Sadoughi University of Medical Sciences. Nine faculties of the university, including six main faculties (medicine, public health, allied medicine, nursing and midwifery, dentistry, and pharmacy), and three satellite faculties (allied medicine, nursing, and traditional medicine) were included in the study.

Participants

Participants in the first phase

A total of 47 individuals participated in the design phase of the evaluation tools, among whom 22 (46.8%) were educational managers, 25 (53.2%) were educators, 24 (51.06%) were men and 23 (49%) were women. Their mean age was 43 ± 5 years. A total of 50 people participated in the phase of measuring the reliability of the tools, of whom 38 (76%) were men and 12 (24%) were women, and their mean age was 38 ± 4 years.

Participants in the second phase

Evaluators: a total of 422 educators and 18 faculty officials (education deputies of faculties and heads of faculties) participated in the study as evaluators.

Educational managers: 54 educational managers were evaluated in this study.

Study Phases

Phase 1: design and psychometric assessment of the evaluation tool

In the present study, two questionnaires were designed to evaluate the performance of managers from the viewpoint of two groups of stakeholders. Questionnaires were compiled in two fields: leadership and professional behavior. The raters were faculty officials and educators in the faculties.

Item generation

In this step, a review of the literature related to attributes and tasks of educational management, and leadership at different levels of the universities was carried out. Furthermore, educational standards in the institution and program accreditation, and the national and local

regulations regarding the duties of the educational managers were reviewed.

In the second step, an expert panel of education and medical education professionals ($n = 8$) reviewed the extracted literature items, leading to the compilation of an initial questionnaire with 32 items.

In the third step, the opinions of the managers in the field of education were examined in the panel regarding the items. The results were summarized and the first draft of the questionnaire was provided by the research team.

Assessment of face and content validity

In the fourth step, the content and face validity of the questionnaires were qualitatively reviewed through the modified Delphi method. After that, the quantitative validity was reviewed using the indices of Content Validity Index (CVI) and Content Validity Ratio (CVR).

- a. **Qualitative content validity assessment:** The content validity of the tools was assessed qualitatively using the modified Delphi technique where the experts in educational management and leadership ($n = 22$) participated. For this purpose, the semi-structured electronic form of the items was prepared with close-ended questions and one open-ended question. Three Delphi rounds were continued until a consensus was reached. In this step, four items were suggested to be removed to eliminate redundancy from each questionnaire. The suggestions were discussed and confirmed by the expert panel.
- b. **Quantitative content validity assessment:** Quantitative content validity of 28-item questionnaires was evaluated using CVR (Content Validity Ratio) and CVI (Content Validity Index) with the participation of 22 experts in the fifth step. To determine CVR, the experts were asked to review each item based on a three-level scale (necessary, useful but not necessary, and not necessary). According to the Lawsche table, the minimum CVR was determined [10]. For CVI, the criterion of "relevance" of each item was examined using a four-point Likert scale. In this study, the item-level content validity index (I-CVI) was examined for each item, and the scale-level content validity index (S-CVI/Ave) was also calculated [11]. At this stage, the results of the validity assessment were discussed in the expert panel. The content and face validity of the questionnaire items were confirmed in this step.

Reliability assessment

The internal consistency of the questionnaires was assessed from the viewpoints of educators ($n = 35$) and faculty officials ($n = 15$). The reproducibility of the tool was checked by evaluating the managers from the viewpoints of the faculty officials and educators for two consecutive weeks (test-retest approach).

Both questionnaires of the educational managers from the viewpoint of the educators and the faculty officials were finalized with 28 items in two categories: professional behavior (12 items) and leadership behavior (16 items) (Appendix 1). The scoring system for the questionnaires ranged from 1, indicating "well below expected," to 5, indicating "well above expected."

Phase 2: implementation of the evaluation of educational managers

To implement the evaluation of educational managers, an electronic evaluation platform was prepared and the forms were organized. The training of evaluators at different levels, including senior managers at faculty, and educational departments, was conducted in various ways, including educational workshops, videos, and booklets. The inclusion criterion for evaluators was the interaction of at least three months with educational managers. Each manager needed to be evaluated by the faculty officials, which included the head of the faculty and the deputy head. Moreover, the educators in each educational department were required to assess their educational manager. Confidentiality was maintained throughout the evaluation process, including data collection, analysis, and the preparation of performance reports. To monitor this process, we tracked notification and response rates and provided feedback to various evaluators at different intervals. The evaluation was conducted electronically using the faculty evaluation system over the three months leading up to the end of the academic year.

The evaluation results were prepared and made available in the personal profiles of educational managers to provide feedback. Also, a panel of management reports was prepared for faculty and university officials with a specified and defined access level.

Data analysis

Descriptive statistics (mean \pm standard deviation) were calculated to summarize continuous variables. The normality of distribution was assessed using Shapiro-Wilk tests. ($p > 0.05$). In the initial phase, the questionnaire's internal consistency was assessed using Cronbach's alpha coefficient (α), with acceptable thresholds defined as $\alpha \geq 0.7$. Test-retest reliability was evaluated through

intraclass correlation coefficients (ICC) using a two-week interval between administrations reported.

During the analytical phase, exploratory factor analysis (EFA) was performed using principal axis factoring with varimax rotation to identify latent constructs within the domains of professional behavior and managerial performance. Sample size adequacy was confirmed via the Kaiser-Meyer-Olkin measure ($KMO > 0.5$) and Bartlett's test of sphericity ($p < 0.001$). Factor retention was determined through parallel analysis and scree plot evaluation, retaining factors with eigenvalues ≥ 1 . (Appendix 2).

All analyses were conducted using SPSS 26 and AMOS 26 (IBM Corp.), with $\alpha < 0.05$ defining statistical significance. Factor loading patterns were visualized through a radar chart generated in Microsoft Excel, illustrating domain-specific factor loadings derived from EFA.

Results

Validity assessment

All items in the CVR calculation scored above 0.42. The CVI for both questionnaires also exceeded 0.79, allowing all items to be retained. The Scale-Level Content Validity Index (S-CVI) for evaluating educational managers was 0.73 from educators and 0.83 from faculty officials.

Reliability assessment

The internal consistency of the tools for measuring the performance of educational managers from the viewpoint of educators (Cronbach's $\alpha = 0.81$ and ICC = 0.95), and from the viewpoint of faculty officials (Cronbach's $\alpha = 0.84$ and ICC = 0.92) was confirmed.

Implementation of evaluation

The evaluation results of the managers of the educational departments, as viewed by various stakeholders—including university officials and department-level educators—are presented in Table 1. These results focus on two main areas: professional behavior and leadership.

To extract the priority components of managers in two domains of professional behavior and managerial performance, the data were checked for the adequacy of factor analysis and KMO was confirmed with a value

of at least 0.50. The results of the exploratory analysis of leadership and professional behavior from the viewpoint of educators and faculty officials during the epidemic and post-epidemic periods are shown in Figs. 1, 2, 3 and 4, respectively. Table 2 provides a summary of the prioritized components within the two domains of professional behavior and managerial performance, as perceived by educators and educational officials.

Professional behavior of educational managers in the Covid-19 epidemic

See Fig. 1.

Professional behavior of educational managers in the post-COVID era

See Fig. 2.

Leadership behavior of educational managers in the COVID-19 epidemic

See Fig. 3.

Leadership behavior of educational managers in the post-COVID era

See Fig. 4, Table 2.

Discussion

In the epidemic and post-epidemic periods, "positive and constructive interaction with others", "honesty and integrity" and "responsibility" were determined as important components in the professional behavior of the educational managers from the viewpoint of educators and faculty officials. In domains of leadership behavior during the COVID and post-COVID era, there were three common themes, including: "supporting and developing professionalism and ethics in the educational department", "supervising educational and research activities in the educational department" and "observance of the leadership and management principles".

Professional behavior of educational managers during the COVID-19 epidemic

In the field of professional behavior, "responsibility" was reported as a common item with a high factor loading

Table 1 The educational managers' scores in two domains of professional behavior and managerial performance

Domain	Evaluator	The first year of the COVID epidemic		The second year of the COVID epidemic		Post-COVID first year		Post-COVID second year	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Professional behavior	Educators	4.48	0.79	4.46	0.75	4.45	0.79	4.57	0.56
	University officials	4.86	0.43	4.92	0.23	4.71	0.46	4.00	0.57
Managerial performance	Educators	3.97	1.39	4.25	0.91	4.36	0.82	4.44	0.67
	University officials	3.71	1.78	4.85	0.33	4.60	0.69	4.02	0.57

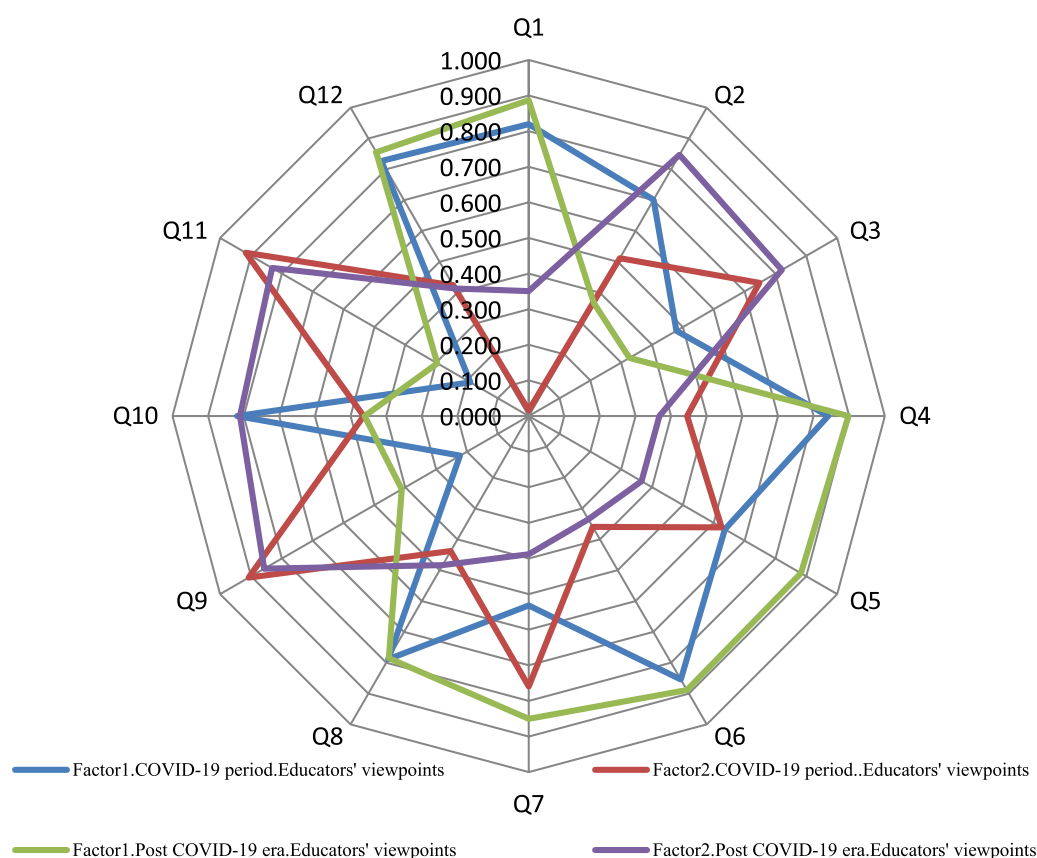


Fig. 1 Factor loading of professional behavior from the viewpoint of educators in the epidemic and post-COVID era

during the COVID-19 epidemic in the viewpoints of educators and faculty officials.

The managers demonstrated better performance in key areas such as honesty and integrity, positive and constructive interaction, responsibility, and the development of personal competencies. Educational managers effectively facilitated constructive communication between individuals and organizations during distance education. In addition, one of the phenomena experienced during the epidemic was the expansion of virtual education technologies. This issue increased the need for educational managers to empower themselves and other members to design and implement e-learning programs and virtual curriculum management [3, 6]. The results showed that the components are appropriate to respond to the needs and conditions of the epidemic. Educational managers highlighted the importance of being accessible through various communication channels to engage with multiple stakeholders and carry out assigned tasks within the evolving processes of university administrative bureaucracy. During the pandemic, they adhered to the

standards of academic professionalism and maintained respectful behavior in virtual interactions. In line with the present study, Beauchamp et al. introduced communication, honesty, and commitment of the individuals to the system as drivers of the educational system in the crisis period [12].

Professional behavior of educational managers in the post-COVID era

Interaction as a requirement of a face-to-face process was emphasized by educational managers in the post-COVID era. Also, after reducing compliance with educational regulations during the COVID epidemic and changing the culture of students and faculties, strict implementation of educational regulations was emphasized by the managers of the educational departments. From the viewpoint of faculty officials, managers paid more attention to adherence to professional principles in interactions and interpersonal communication and regulations in providing in-person educational services. In line with the present results, Constantia et al. introduced empathy,

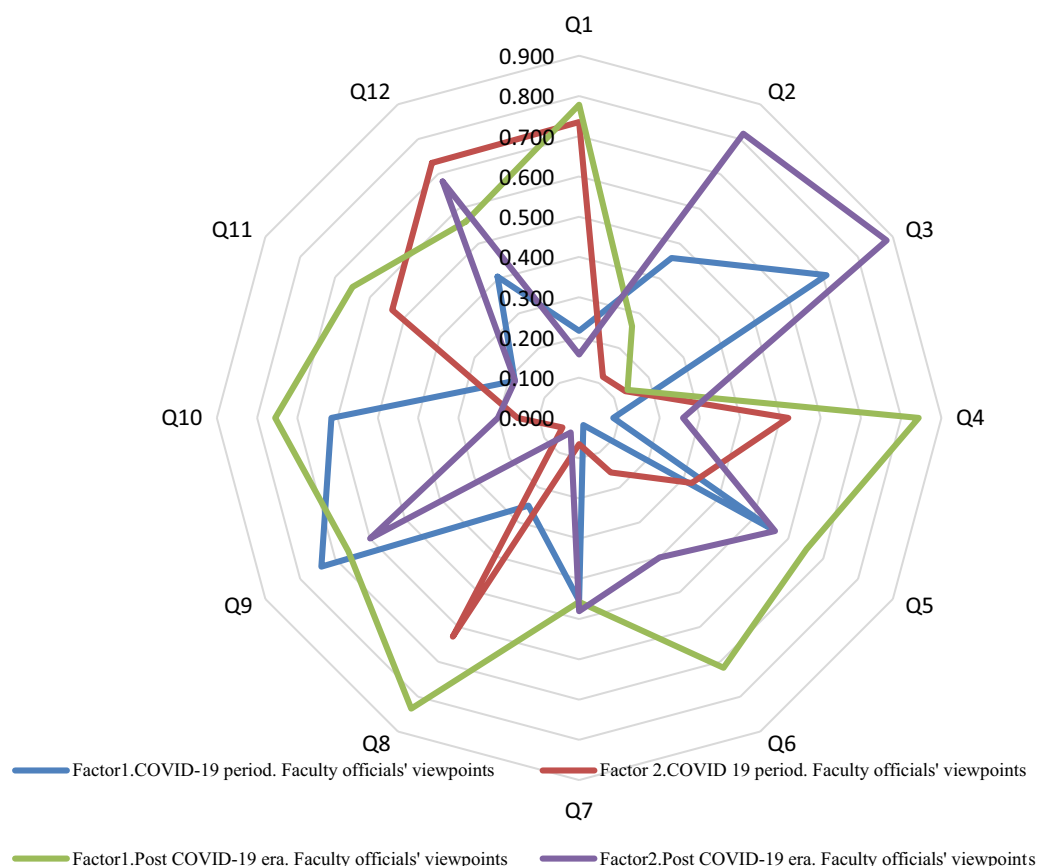


Fig. 2 Factor loading of professional behavior from the viewpoint of faculty officials in the epidemic and post-COVID era

altruism, and teamwork as a solution for managing complex situations in educational systems [13].

Leadership behavior of educational managers in the COVID-19 epidemic

The managerial components including supervision, faculty development, evaluation, and development of professionalism were highlighted in the epidemic era through the viewpoints of educators and faculty officials. The need to monitor the educational system in virtual education and to develop the capabilities of educators to respond to the changing requirements of virtual education have affected the results. Likewise, Karwanto et al. found that during COVID-19, educational systems expanded monitoring, support mechanisms, and evaluations of educators and students to improve performance and address pandemic challenges [14]. Karimian et al. proposed a management model for medical education during crises, emphasizing monitoring, cooperation, empowerment, technology use, evaluation, and feedback. They highlighted the importance of these strategies in advancing medical education goals during crises,

particularly through empowering educators and fostering collaborative participation to adapt to virtual learning and technological advancements [3]. In line with Karimian's model, the current results showed that educational managers effectively used the components of monitoring, evaluation, feedback, and empowering educators and students in the management of crises.

Leadership behavior of educational managers in the post-COVID era

In the post-COVID era "observance of leadership and management principles" had the highest factor as a common item from the point of view of the two groups of evaluators. From the viewpoints of educators, planning, faculty evaluation, and program evaluation were highlighted in this era. The establishment of educational development programs, faculty development, and professionalism improvement in the departments were adhered to by the educational managers from the faculty officials' perspective. In this era, the need for empowerment, and educational development programs in different departments was emphasized by the educational managers

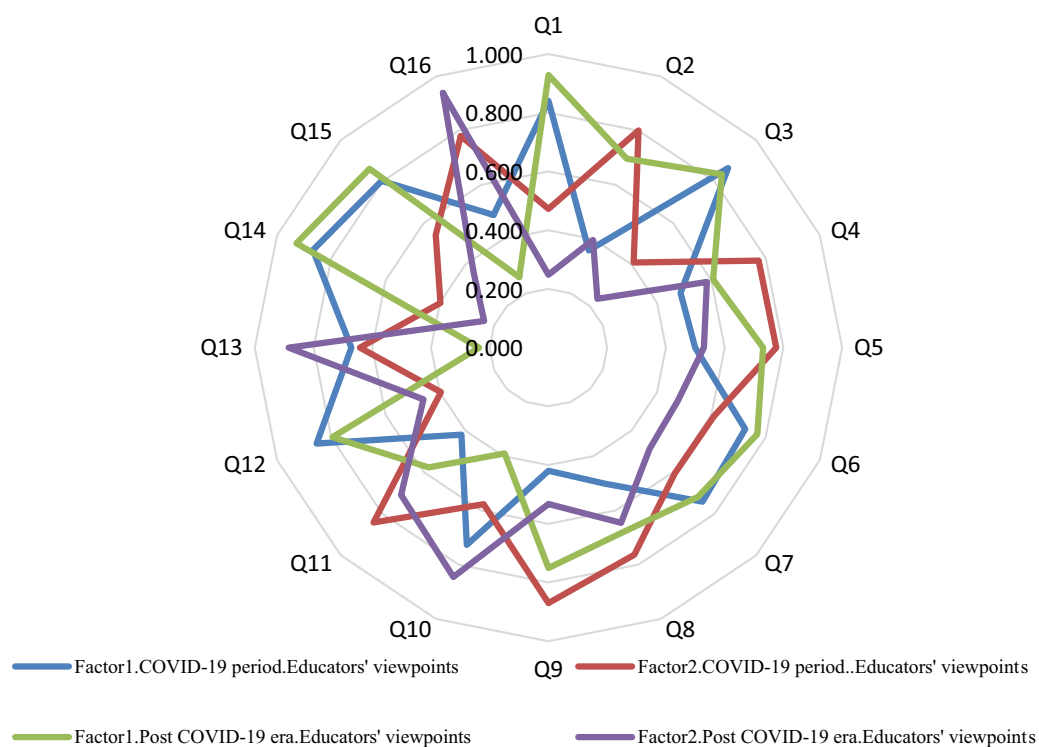


Fig. 3 Factor loading of leadership behavior from the viewpoint of educators in the epidemic and post-COVID era

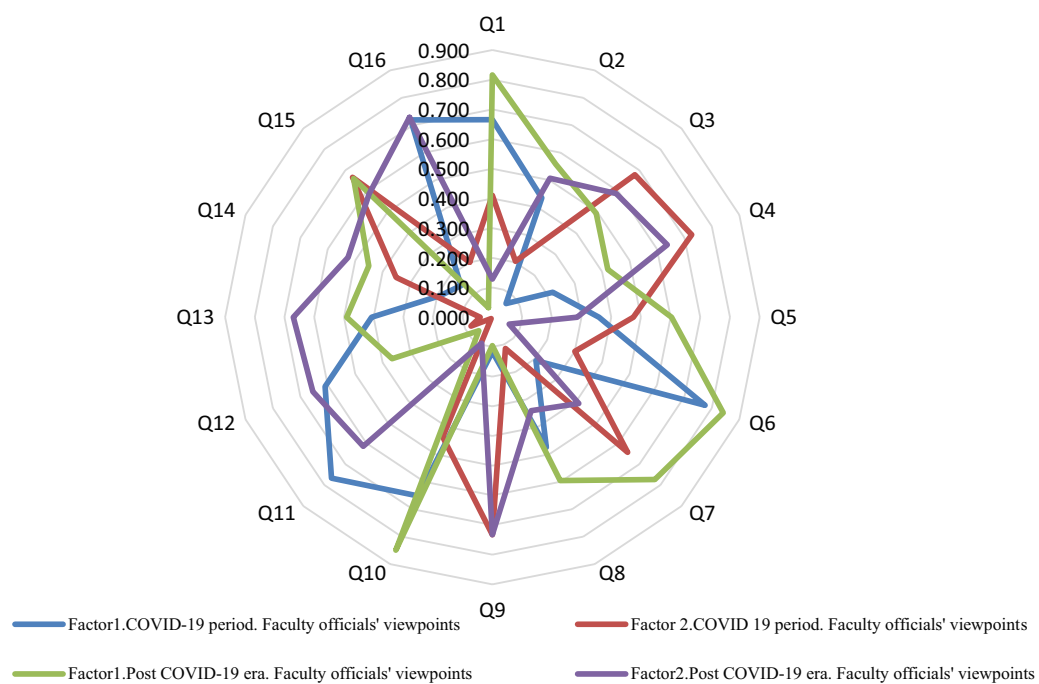


Fig. 4 Factor loading of leadership behavior from the viewpoint of faculty officials in the epidemic and post-COVID era

Table 2 The priority components in the two domains of professional behavior and managerial performance of managers from viewpoints of educators and educational officials

Domain	Era	Educator	Educational officials
Professional behavior	COVID epidemic	<ul style="list-style-type: none"> ■ Honesty and integrity ■ Positive and constructive interaction with others ■ Responsibility* ■ Development of personal competencies and keeping it up-to-date 	<ul style="list-style-type: none"> ■ Sufficient and effective availability ■ Responsibility* ■ Respectful behavior with students and colleagues ■ Observance of academic professional manners
	Post-COVID era	<ul style="list-style-type: none"> ■ Positive and constructive interaction with others** ■ Honesty and integrity ■ Observance of educational regulations*** ■ Responsibility 	<ul style="list-style-type: none"> ■ Positive and constructive interaction with others** ■ Altruism with students and colleagues ■ Observance of educational regulations*** ■ Sufficient and effective availability
Leadership behavior	COVID epidemic	<ul style="list-style-type: none"> ■ Supervising the instructional design and implementation ■ Participation in faculty evaluation and giving feedback to them ■ Supporting and developing professionalism and ethics in the educational department ■ Supervision of educational and research activities in the department 	<ul style="list-style-type: none"> ■ Sufficient and effective availability ■ Responsibility ■ Respectful behavior with students and colleagues ■ Observance of academic professional manners
	Post-COVID era	<ul style="list-style-type: none"> ■ Preparing an action plan based on the faculty policies ■ Participating in faculty evaluation and giving feedback to them ■ Programs evaluation in the department and providing feedback to different stakeholders ■ Adherence to the principles of leadership and management 	<ul style="list-style-type: none"> ■ Planning for faculty development to quality improvement of education ■ Planning and implementation of educational development programs in the departments for learners and employees ■ Supporting and developing professionalism and ethics in the educational department ■ Respecting the character and principles of leadership and management

* The common component

due to the demand of stakeholders for education using blended educational strategies and digital educational technologies. Similarly, Torrance and colleagues identified strategies such as professional development for managers, advancement of educational processes and teaching-learning methods, and empowerment as essential to addressing the needs of educational systems during complex and challenging periods [6]. Kidson et al. highlighted the importance of developing professional behavior in the post-COVID era, as managers and educators faced changes in educational systems and needed to plan for excellence and justice in society [15].

Limitation

Due to the restrictions imposed by the epidemic period, the data collection was conducted electronically. One limitation of this study was the tendency of respondents to select middle options on the questionnaires.

In the present study, we assessed the content validity and internal consistency of the questionnaires. Future studies should consider evaluating the construct validity of the questionnaires, such as through explanatory and confirmatory factor analysis.

Conclusion

The results showed that the validity and reliability of the questionnaires for evaluation of the educational managers were confirmed from the point of view of educators and faculty officials in the domains of professional behavior and managerial performance. In the crisis era, responsibility and constructive interaction were highlighted by educational managers. Furthermore, supervision and developing professionalism were as main activities of the educational managers in the complex educational situation. The development of professional principles in levels of personal and systemic, and monitoring systems in the universities may assist in managing educational systems in the crisis era.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13104-025-07166-7>.

Additional file 1

Additional file 2

Author contributions

F.K. and A.H.M. conceptualized and designed the study and collected the data. S.J. analyzed the data. F.K., S.J., and A.H.M. wrote the main manuscript text. The authors have met the criteria for authorship and had a role in preparing the manuscript. Also, all authors approved the final manuscript.

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Availability of data and materials

The datasets generated and/or analyzed during the current study are not publicly available due to the confidentiality of the data of participants but are available from the corresponding author at reasonable request.

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee at the National Agency Strategic Research in Medical Education, Tehran, Iran. (IR.NASRME.REC.1400.032). All participants were provided with information on the study. The written informed consent forms were obtained from all participants. The work was conducted following the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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