Original Article

Validity and Reliability of American College of Healthcare Executive Competencies Assessment Tool for the Managers of Healthcare Networks in Zanjan Province

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ARTICLE INFO   ABSTRACT

Introduction: The importance of using the competent managers in the healthcare system, shows the need to recognize their competencies and having standards to measure competencies. In this regard, the purpose of this article is to determine the validity and reliability of the competency assessment tool of the American College of Health Care Executives for the managers of healthcare networks in Zanjan province.

Methods: This study is a descriptive-analytical study in which data collection was performed using the American College of Health Care Executives Competencies Assessment tool. This tool was provided to 30 healthcare management professors and experts, in Zanjan province. To investigate the validity, internal consistency and repeatability Content Validation methods, Cronbach's Alpha coefficient and Retesting were used respectively. Data were analyzed using Excel 2010 and SPSS 18 software**.**

Results: The results showed that 235 out of 302 questions related to the American College of Health Care Executives Competencies Assessment tool had low content validity and should be rejected. The content validity index of the final questionnaire was calculated to be 0.84, which is acceptable. The results also showed that the final questionnaire was reliable with $\alpha=0.98$ and repeatable**.**

Conclusion: Utilizing a framework to assess the competencies of healthcare network managers can be of benefit in choosing qualified managers. According to the results of this study, the provided tool shows a desirable reliability and a fairly convenient validity to be used in healthcare networks of Zanjan province.

Introduction

To achieve organizational goals, competent people must be at the forefront (1). In organizations, the success in achieving organizational goals and missions depends on the presence of competent managers (2). In all organizations, the most important element that is effective in achieving organizational goals is "management"(3). According to Peter Drucker, management is a vital member of today's organizations. Managers can play an irreplaceable role in leading and directing organizations depending on their duties and powers, and this is the reason of talking about the functions, roles and characteristics of managers and their competencies from the first decades of the birth of management science (4). You can't find any organizations that has experienced continuous development and sustainable success unless managed by a competent manager or a team of competent and efficient managers and leaders (5).

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Health care organizations are also constantly challenged to improve the quality of health services while reducing operating costs. Health care organizations are able to achieve the best performance in their business when they achieve their goals by implementing the leadership competency model (6). This highlights the need for studies to provide competencies models for managers, as the researchers (7) in a study entitled " Validation of a management competency assessment tool for health service managers" designed a tool with six main dimensions for measuring the competencies of healthcare managers and stated that the Management Competencies Assessment Tool can help measure the competencies of health care managers. Also, the National Center for Health Care Leadership in the United States (8) conducted a study about competencies with a focus on leadership in health organizations, named " National Healthcare Leadership Survey: Implementation of Leadership Development Best Practices". They examined the skills required to effective management at all levels, from zero to senior management. This model included three areas: transfer or conversion, human performance and skills and also, it had eighteen levels of behavioral competency and eight levels of technical competency and each competency had three to six levels. It defines that which stage of a competency in the medical, nursing and management professions a manager is (elementary, intermediate, advanced). This model helps organizations to select and improve effective people for management and leadership.

In another study (9), researchers presented a competency model for the general managers of the Ministry of Health and Medical Education. They discovered eight main dimensions of competencies including: general knowledge and awareness, intelligence and talent, values and attitudes, personal characteristics, communication skills, decision-making skills, leadership skills and managerial abilities. Hayati, Dadgar and Jannati (10) studied "the hospital managers' competency models" with the aim of identifying the competency models for hospital managers and extracting their required competencies. They concluded that to select and evaluate the performance of hospital managers, a list of the required competencies should be provided to be able to select them based on the principles of meritocracy and to prevent their installation and removal based on personal taste. Competency models are useful tools to determine these competencies, provided that they are utilized depending on the specific conditions of each country. In general, most studies indicate the need for rules and criteria for selection, appointment and promotion of managers (10). Considering the economic problems of the country, the high cost of construction and equipment of hospitals, and in order to prevent the loss of specialized manpower and the need for extensive coverage of health services throughout the country, planners and managers should make efforts to make maximum use of available facilities in the healthcare networks, identify problems and priorities, plan effectively and efficiently, and provide a model that provides maximum efficiency and effectiveness for the healthcare networks (11). It is obvious that the development of competency assessment tools can be a very important step in creating a database of current and future managers, succession planning, talent management, ability improvement and better decision-making process in appointing healthcare managers with a special approach to meritocracy, in order to eliminate the managerial weaknesses in this area. On the other hand, the need to produce

localized knowledge and policy-making based on the culture and values of Iranian society and its specific issues and needs is one of the most important concerns in the country (12). Based on the researcher's investigations, currently the only existing tool for evaluating healthcare network managers is the checklist for monitoring the management performance of healthcare networks. The main purpose of this study is to determine the validity and reliability of the ACHE Competencies Assessment Tool to assess the competencies of Zanjan healthcare network managers.

Methods

This study is a descriptive-analytical study. After translating the questionnaire which is derived from the standard Competencies Assessment Tool of the American College of Healthcare Executives in Persian and its confirmation by health care management experts and academic members, Content Validation methods, Cronbach's Alpha coefficient and Retesting were used respectively in order to assess the validity, internal consistency and reliability of that.

Translation and cultural adaptation of the instrument were performed according to the standard method (13). The process of validation of the studied tool consisted of the following steps:

In the first step, the original English version of the ACHE Competencies Assessment tool was translated into Persian separately by two native Persian translators using the open translation method. Then the translations were compared by two professors and the questions were matched in terms of meaning and concept. They were assessed on their clarity of translation, avoiding field-specific terminology, compliance with Iranian culture, and matching to the original text in terms of the meanings. A Persian version of this tool was prepared.

In the second step, the panel of experts' method was used. The panel included an English teacher who had not previously seen the main questionnaire, and two professors of healthcare management. The purpose of this panel was to evaluate and approve translations to ensure that the Persian translation matches the original text and that the sentences of the Persian text are accessible. The original translated version was returned to the original language by the English teacher (backward translation) and compared with the original version in a meeting with professors of health services management.

In the third step, data collection was performed using the tools obtained from the previous step. In this tool, competencies are divided into 302 questions in 5 main dimensions of communication and relationship management, leadership, professionalism, knowledge about health care environment and business skills and knowledge. The dimension of communication and relationship management includes three components: relationship management, communication skills, facilitation and negotiation. The leadership dimension includes four components: leadership skills and behavior, organizational climate and culture, communicating vision, and managing change. The professionalism dimension includes three components: personal and professional accountability, professional development and lifelong learning, and contributions to the community and profession, which, according to the Likert scale, are classified to very important (5), important (4), up to somewhat important (3), low importance (2) and insignificant (1). In order to collect data, the researcher(we) distributed the tools among the individuals (30 in total) who in this study were professors and faculty members, experts, and managers of Zanjan healthcare

networks. Necessary points as well as explanations regarding how to complete the tool were explained as much as possible. After collection, the data were entered into SPSS (PASW Statistics 18) and Excel 2010 software to determine validity (content validity, face validity and structural validity). Then, basic monitoring such as checking out junk values and errors related to data values were performed on them.

In the fourth step, the CVR was calculated based on the frequency of responses.

CVR, A method for assessing the validity of the questionnaire which is developed by Lawshe (14). In order to calculate this ratio, the opinions of experts in the field of content validity test are used, the questionnaire is provided to the panel group, whose role is to guide the panel group members so that the members can judge accurately based on the necessity of the tool components and provides a model or questionnaire and asks them to comment on each item in relation to the judgment that has been made. Members' responses are coded as follows: E necessary U-useful but necessary and -N unnecessary (14). In this study, in order to get better results, we used a 5-point Likert scale (very important-important - to some extent important-of little significance-insignificant) instead of a 3-point Lawshe scale. We developed a model for determining content validity. In order to interpret the results, it was necessary to convert the nominal rank criteria into Lawshe numerical rank criteria. For this purpose, the following transformations were performed: Very important and important - (equivalent to the necessity of the question) was replaced with the number 2. Somewhat important - (equivalent to being necessary but not required to be questioned) was replaced with the number 1. Of little significance and insignificant - (equivalent to being

considered unnecessary) was replaced by zero.

To determine the criteria for acceptance or rejection of the questions, the following was done:

1) Unconditional acceptance of the question if it's CVR is equal to or greater than 0.75.
2) Acceptance of the question if it's CVR is between zero and 0.75 and the average number of judgments is equal to or more than 1.5. This value of the CVR indicates that more than half of the panel members have chosen the "very important" or "important" option (essential item on the Lawshe scale). An average value equal to or greater than 1.5 indicates that the mean of the judgments is closer to the "very important" and "important" options. On the other hand, the mean value equal to and greater than 1.5 indicates that the mean of the judgments is equal to and greater than 75% of the maximum mean of 2, which is greater than the minimum accepted value of 60% determined for assurance (14). 3) Reject the question if the CVR is less than zero and the numerical average of the judgments is less than 1.5. This means that less than half of the people have chosen the "very important" or "important" option (a necessary item on the Lawshe scale) and the average number of judgments is closer to the "somewhat important" option (non-essential Lawshe scale). The following formula was used to calculate CVR:

$$\text{cvR} = \frac{n_e - \frac{n}{2}}{\frac{n}{2}}$$

n_e The number of panel members who have identified the dimension or the question as "necessary".

$\frac{n}{2}$ The total number of group members divided by two.

CVR is a linear and direct conversion of panel members who have selected the

phrase "necessary ".The values assigned to the CVR are:

CVR becomes negative when less than half of people choose the "necessary" option.

When half of the people select "necessary" and the other half select other options, the CVR is zero.

When everyone selects the "necessary" option, the CVR becomes 1 (which is adjusted to 99% for easier conversion.

Then the CVI was calculated from the remained questions. CVI is used to measure the validity of the questionnaire based on the CVR and the average CVR values, which indicates the comprehensiveness of judgments about the validity or applicability of the final model, test, or instrument. The higher the final CVR, the CVI is towards the 99 percent (14).

Results:

Based on the obtained CVR, 67 questions remained from the total questions (302) of the tool in 4 dimensions (Communication and Relationship Management, Leadership, Professionalism and Business skills and knowledge). The value of CVI was 0.84.

$$CVI = \frac{\sum CVR}{\text{Retained number}} = \frac{56/657}{67} = 0.845 \cong 0.84$$

To determine the internal consistency of the instrument, the value of Cronbach's alpha coefficient was calculated, and its value was 0.986. Also, the value of Cronbach's alpha coefficient for the dimensions of relationship and communication management, leadership, Professionalism, Business knowledge and skills Were 0.984, 0.985, 0.983 and 0.988, respectively. Then, it was used to determine the Internal Correlation Coefficient.

Internal Correlation Coefficient is used as a more accurate criterion for announcing repeatability between test acceptances times (15). 10 days later, the tool was given to the same 30 people again and the value of this index was Internal Correlation Coefficient = 0.996.

Tables 1 to 4 list the remaining questions from the American College Healthcare Executives Competencies Assessment tool and the main criteria and factors that cover the above questions.

According to Table 1 to 4, the relevant factors and criteria are summarized in Table 5.

According to the obtained factors, the competencies of managers can be described by the following conceptual model (Figure 1).

*Table 1. **Communication and Relationship Management***

1- Relationship Management	1- Organizational structure and relationships
	2- Build collaborative relationships
	3- Demonstrate effective interpersonal relations
	4- Develop and maintain medical staff relationships
	5- Identify stakeholder needs/expectations

	6- Provide internal customer service
	7- Practice and value shared decision making
	8- Other professional norms and standards of behaviors as defined by professions such as AHA, physician's oaths and other professional pledges
2- Communication Skills	9- Public relations
	10- Principles of communication and their specific applications
	11- Sensitivity to what is correct behavior when communicating with diverse cultures, internal and external
	12- Communicate organizational mission, vision, objectives and priorities
	13- Identify and use human and technical resources to develop and deliver communications
	14- Prepare and deliver business communications, including meeting agendas, presentations, business reports and project communications plans
	15- Present results of data analysis to decision makers
	16- Provide and receive constructive feedback
	17- Use factual data to produce and deliver credible and understandable reports
3-Facilitation and Negotiation	18- Mediation, negotiation and dispute resolution techniques
	19- Labor relations strategies
	20- Build effective physician and administrator leadership teams
	21- Create, participate in and lead teams
	22- Facilitate conflict and alternative dispute resolution
	23- Facilitate group dynamics, process, meetings and discussions

Table 2. Leadership

1-Leadership Skills and Behavior	24- Leadership styles/techniques
	25- Adhere to legal and regulatory standards
	26- Develop external relationships
	27- Collaborative techniques for engaging and working with physicians
	28- Incorporate and apply management techniques and theories into leadership activities
	29- Foster an environment of mutual trust
	30- Support and mentor high-potential talent within the organization
	31- Advocate and participate in healthcare policy initiatives
2-Organizational Climate and Culture	32- Create an organizational climate that encourages teamwork
	33- Create an organizational culture that values and supports diversity
	34- Knowledge of own and others' cultural norms
	35- Assess the organization, including corporate values and culture, business processes and impact of systems on operations
3-Communicating Vision	36- Establish a compelling organizational vision and goals
	37- Create an organizational climate that facilitates individual motivation
	38- Encourage a high level of commitment to the purpose and values of the organization
	39- Hold self and others accountable for organizational goal attainment
	40- Gain physician buy-in to accept risk and support new business venture

4-Managing Change	41- Promote and manage change
	42- Explore opportunities for the growth and development of the organization on a continuous basis
	43- Promote continuous organizational learning/improvement
	44- Anticipate and plan strategies for overcoming obstacles
	45- Anticipate the need for resources to carry out initiatives
	46- Develop effective medical staff relationships in support of the organization's mission, vision and strategic plan

Table 3. Professionalism

	47- Patient rights and responsibilities
	48- Consequences of unethical actions
	49- Cultural and spiritual diversity for patients and staff as they relate to healthcare needs
	50- Conflict of interest situations as defined by organizational bylaws, policies and procedures
	51- Professional roles, responsibility and accountability
	52- Professional standards and codes of ethical behavior
	53- Balance professional and personal pursuits
	54- Uphold and act upon ethical and professional standards
	55- Adhere to ethical business principles
	56- Organizational business and personal ethics

2-Professional Development and	57- Professional norms and behaviors	
	58- Professional societies and memberships	
	59- Contribute to professional knowledge and evidence	

Table 4.Business Skills and Knowledge

Strategic Planning	60- Manage projects and/or resources
	61- Implementation planning
	62- Characteristics of strategic decision support
	63- Strategic planning processes development and implementation
	64- Develop and monitor departmental strategic and tactical objectives
	65- Develop a benefits realization model that measures product or service performance to ensure that strategic goals are met
	66- Organizational mission, vision, objectives and priorities
	67- Pursuing and establishing partnerships and strategic alliances

Table 5. Critical domains and criteria of the remaining questions

| rows	critical domains	criteria
1	Communication and Relationship Management	Relationship Management, Communication Skills, Facilitation and Negotiation
2	LEADERSHIP	Leadership Skills and Behavior, Organizational Climate and Culture, Communicating Vision, Managing Change
3	PROFESSIONALISM	Personal and Professional Accountability, Professional Development and Lifelong Learning
4	BUSINESS SKILLS AND KNOWLEDGE	Strategic Planning
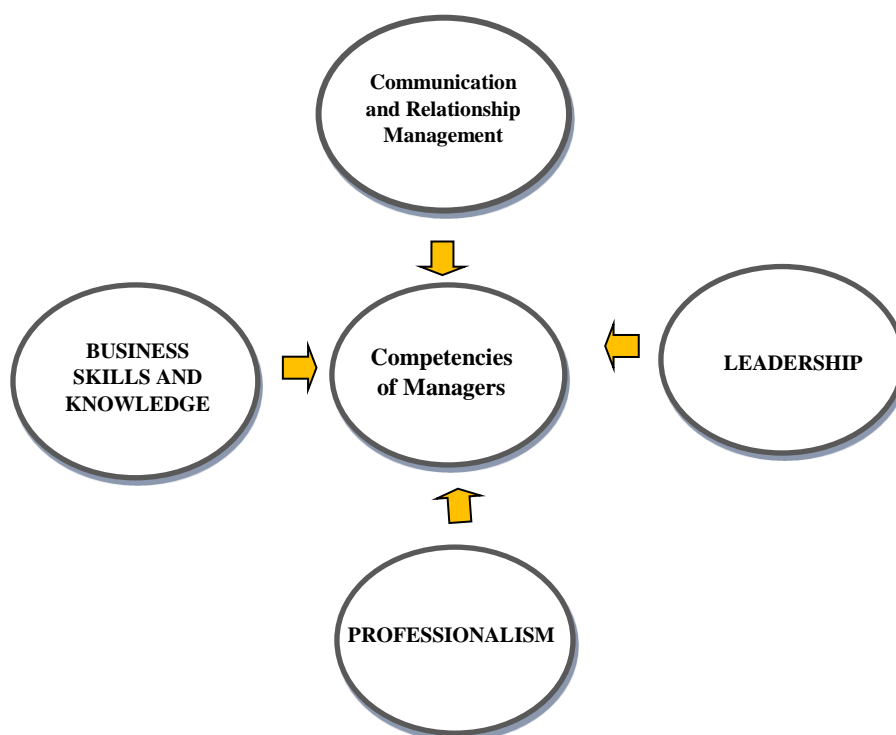
Figure 1. Factors affecting the competencies assessment tools of managers in Zanjan province

Discussion:

In this study, based on the standard tools provided by the American College of Health Care Executives, the validity and reliability of this tool for use in the healthcare networks of Zanjan province were determined. Comparison of the results of this research with the results of other works shows that some of the components obtained are consistent with the results of various other studies.

Gusmao Lopez et al. (16) in their work entitled " An assessment of management competencies for primary health care managers in Timor-Leste " used a researcher-made questionnaire and used confirmatory factor analysis to verify the validity and reliability of their methods and obtained new dimensions of the problem. Initially, this study included seven factors, but after verifying the methods using confirmatory factor analysis, the number of factors were reduced to six. This study

showed that the managers of primary health care in Timor-Leste were ranked as incompetent in terms of organization recognition, professionalism in the workplace, problem solving in financial management, effective leadership and were ranked as competent in the one category of human resource management and relationships. The researchers concluded that policy makers and stakeholders should pay more attention to organizational knowledge, professionalism in workplace, problem solving in financial management and effective leadership, and managers should be able to perform management functions effectively and efficiently. Howard et al. (7) in their research entitled "validation of a Management Competency Assessment Tool for health service managers", obtained 6 main dimensions 1- evidence-based decision making (evidence), 2- resource management, implementation and operations (resources), 3- knowledge about the organization and

health care environment (knowledge), 4- Quality management of communication and relationships interpersonal (communication), 5- Leadership of the organization and individuals (leadership), 6- Activation and management of change (change). The Management Competency Assessment Tool had the ability to help measure the competencies of health care service managers. The results of this research, which includes the following 4 main dimensions: 1) relationship management factor with criteria for relationship management, communication skills and facilitation and negotiation 2) leadership factor with criteria for behavior and leadership skills, organizational climate and culture communication vision and change management 3) Professionalism factor with the criteria of individual and professional accountability, professional development and lifelong learning 4) Business knowledge and skills factor with the criterion of strategic planning, when compared to the present study, show that both tools are fully consistent in some criteria Including relationship management, communication skills and negotiation and leadership, organizational climate and culture and change management but do not align strategically in terms of organizational climate and culture, individual and professional accountability, professional development and lifelong learning and planning. Mahbanoui, Gholipour and Aboui Ardakan (9) presented the competency model of the general managers of the Ministry of Health and Medical Education. The dimensions obtained in their study included eight main dimensions of general knowledge and awareness, intelligence and talent, values and attitudes, personality traits, communication skills, decision-making skills, leadership abilities and managerial abilities. Communication skills and

leadership abilities are consistent with the present study, but the models differ in the dimensions of general knowledge and awareness, intelligence and talent, values and attitudes and personality traits. The researchers concluded that in order to select and evaluate the performance of hospital managers, there should exist a list of competencies needed to select them based on the principles of meritocracy in order to prevent recruitment and removal based on personal opinions, and argued that competency models are useful tools to determine this if they are used with attention to the specific circumstances of each country. The same can be said on the tools obtained in our research and other researchers are welcome to use them in their competency selection models. Mahfouzpour et al. (17) in a study entitled "Selection criteria of public hospital managers in Iran health system " tried to identify and validate key management skills and competencies for use in designing educational programs and determining and employing suitable candidates in Managerial positions. Based on experts' opinions, they identified eight main criteria including personality traits, values, general management knowledge, hospital management knowledge, planning skills, organizing and resource allocation skills, leadership skills, monitoring and supervision skills, and 46 sub-criteria. They found that one of the most important skills in managers is to carry management knowledge, and this shows the need to improve the way managers are selected. The results of the above research in terms of values, leadership and public management are consistent with the present study. Kermani et al. (18) designed a model of competencies of hospital managers and obtained three dimensions: individual, technical and interactive dimensions including 36 components for the concept of

competencies of hospital managers which is different from the present study in terms of the number of factors extracted by the research. According to their components, the interactive dimension is consistent with the results of the present study.

Considering the studies conducted in and outside the country, it can be concluded that the results of the present research in comparison with other studies accurately identify the factors (dimensions), criteria and scales (tools) of managers' competencies and has provided comprehensive and workable dimensions and tools.

Management is one of the most important organizational positions and its proper selection can have direct effects on the development and promotion of any organization. As such, the results of this study show the characteristics of leadership, relationship management, knowledge, business skills and professionalism are important necessities in the appointment of managers of Zanjan healthcare networks. Using the obtained tool and its dimensions, we can have a competent manager selection scheme. Considering that this research has been conducted in Zanjan province and for Zanjan healthcare networks, it is suggested that in order to generalize the results to other healthcare networks, the above tool is encouraged to be used and validated by other researchers in other provinces and at the country level.

Conclusion:

The health system needs powerful managers. In recent years, there have been significant changes in the provision of healthcare services and change leaders. It's not possible to be revised and progressed in healthcare services without highly competent managers who effect on healthcare policies and the provision of healthcare services (19). Primary health care is inherently intertwined with "change" and inevitably requires "new orientation." This feature is most evident in the management of these cares ... and the training should be able to empower mid-level (as well as central) managers in assessing and identifying the needs, choosing the best solution, allocating resources, staff training, establishing the right relationships in management, problem solving and performance evaluation. Health care leaders and executives must have sufficient inherent competencies to accommodate to the increasing complexity of the environment (20).

Since a reliable tool should be used to assess the competencies of managers of Zanjan healthcare networks, in this study, the following factors and criteria was extracted through validation and reliability of the standard ACHE assessment tool for healthcare networks in Zanjan province: 1) the factor of Communication and Relationship Management with these criteria: Relationship Management, Communication Skills, Facilitation and Negotiation,2) Leadership: Leadership Skills and Behavior, Organizational Climate and Culture, Communicating Vision, Managing Change, 3) Professionalism: Personal and Professional Accountability, Professional Development and Lifelong Learning and 4) Business skills and knowledge: Strategic Planning.

In general, based on the results of this study and comparing them with other studies, it is inferred that the extracted tool for use in healthcare networks in Zanjan, is valid and reliable appropriately.

Conflict of interest:

The authors declared that there is no Conflict interest.

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