



Identifying the Dimensions and Components of Quality Improvement of Education and Rural Health Workers' Performance in Hormozgan, Iran

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Abstract

Background: Education focuses on strengthening the performance of employees while improvement prepares them for other positions in the organization.

Objectives: The present study aimed to identify the dimensions and components of quality improvement of education and rural health workers in Hormozgan, Iran.

Methods: The current applied-descriptive study reviewed education and improvement of rural healthcare workers (called “be-hvarz” in Persian) based on document study and Delphi methods. To this end, 10 researchers in the fields of rural healthcare workers, health experts, and skilled rural health workers were asked to participate. The sampling was based on the snowball method; the data were obtained and refined through the fuzzy Delphi method.

Results: The results showed that the experts had an appreciable inclination for the design and implementation of education in the first phase with a mean of 0.8538, followed by social, cultural, and professional improvement with a mean of 0.8396. Also, among other dimensions, the highest level of education agreement was 0.840. In the second phase, the design and implementation component of education with a mean of 0.84 was in the first place. For the improvement component, the social, cultural, and professional improvement yielded a mean of 0.8521.

Conclusions: The impact of both education and improvement on people's general health should be highlighted more than ever. However, theoretical and practical deep study of qualitative education toward improving and promoting the health system is required.

Keywords: Rural Health Workers, Social, Cultural, and Professional Improvement, Design and Implementation of Education

1. Background

In the modern era, due to intense competition and insufficient skilled personnel, retaining human resources is considered one of the main priorities of organizations (1). In recent decades, the issue of globalization has compelled organizations into looking for new alternatives for the enhancement of privileges based on competition. On this occasion, alteration of learning alternatives in a working environment and improving the performance of human resources to create sustainable development is considered necessary (2). Chen and Kao assert that the performance of organizations in a dynamic competitive environment depends greatly on both the effectiveness of employees and the education administered by organizations (3). Heselbin and Amini (4) suggest that organizations that are more

successful in attracting the best labor force in competitive markets can potentially benefit more optimally from strategic and economic advantages in the future (5). Implementing high-quality education and its improvement based on an appropriate model and tailored with the conditions of each organization enable both individuals and organizations to effectively continue their activities in accordance with organizational and environmental changes and enhance their efficiency (6).

Human resource management of any organization should systematically design the retaining processes of those forces; in fact, they should act as strategic thinkers of the organization with a holistic view of the personnel and the consequences and costs of losing employees. Education is one of the most important tools for human resource development where successful managers understand the

need for education and consider human resource development one of the organizational requirements (7). To provide the quality of health services, establishing optimal communication between health workers and the people is an undeniable necessity. Therefore, health workers must have the necessary knowledge and communication skills to communicate effectively with patients and clients. In other words, having effective communication skills along with other clinical skills is one of the essential needs for health workers (8).

To this end, many organizations have designed and implemented in-service training programs. Although in-service training is often used in connection with new employees, it is also used to improve or enhance the skills of existing employees while introducing new working procedures (9). The term improvement refers to formal education, work experience, connections, personality evaluations, and the capacities that contribute to the future preparation of the employees. Since improvement is a futuristic issue, it involves learning that is not inevitably associated with the employee's present career. Education, conventionally, focuses on strengthening the performance of employees' current work, while improvement paves the way for them to take other positions in different parts of an institution. Education accentuates the improvement of employees' performance in their current positions (10). The issues on the improvement of the human workforce entail the triangle of programs, systems, and individuals' activities that are configured to improve employees' efficacy in the institution whose most important goal is to solve the challenges that staff face and to stave off the expected problems (11).

In the health system of the country, rural health workers are at the forefront attempting to provide healthcare in both villages and cities; two-year courses, both theories, and practices, prepare them to set off for employment in their hometown (12). Each rural health clinic covers a population of nearly 1,500 individuals. The main practice of those clinics is the provision of primary healthcare to the population assigned to receive medical services. Rural health clinics schedule a constant connection with the people, registration of the related health information, and extended surveillance on the given services and activities. Human resource education and improvement are found to be remarkably important factors because the demands of society are experiencing the most constant changes ever. Moreover, the availability of educational resources is insufficient in the health sector; hence, setting the priority for the design and implementation of the needed educational courses, which can result in optimal improvement through the health officials' approval in Hormozgan province is required.

1.1. Education and Improvement Models

1.1.1. The Phillips and Quest Model

This model was proposed by Bergquist and Phillips (13). They believe improvement to include several activities related to the improvement of individuals (changes in beliefs and values), educational improvement (changes in communication processes and interactions), and institutional improvement (changes in institutional contexture and authority). This model refers to the professional domain as educational improvement (change in processes) and introduces it as the first and easiest way to start an improvement system (14).

1.1.2. The Singer Model for Staff Training

Singer suggests that staff education comprises four main stages and eighteen sub-actions. He argues that staff training begins with a needs assessment which requires three analyses at the level of individual, job, task, and organization (15, 16).

1.1.3. The Vaughn Model for Staff Training

Vaughn considers education a systematic process where at all stages, activities must continuously reform through receiving feedback and adjusting its direction toward predetermined goals. Vaughn's proposed process (2005) has two distinct features compared to previous models (17).

In this process, the principles and foundations of adult education and learning are considered the important elements of organizational education where there is a continuous and comprehensive feedback flow between all components and elements of planning and implementation of organizational education. Accordingly, each stage of organizational training can affect the improvement and modification of all components and other stages of this process (18).

2. Methods

The current study identifies the dimensions and components of the quality improvement of education and rural health workers' performances in Hormozgan province and outlines a new plan of education and improvement of rural health workers. This qualitative study is both fundamental and applied.

The convenience sample included 10 experts and university professors of health. To collect the samples, researchers used the systematic snowball method sampling. To collect the data, the study went through a questionnaire, document study, Delphi methods, and a semi-structured interview. To this end, 10 researchers in the

fields of rural healthcare workers, health experts, and skilled rural health workers were asked to participate. The sampling was based on the snowball method; the data were obtained and refined through the fuzzy Delphi method. The questionnaire comprised the sentences and was based on a 5-point Likert scale based on the conceptual model, so the experts agreed via verbal variable expressions such as strongly disagree, disagree, neutral, agree, and strongly agree.

This method is selected to make decisions and consensus on issues where the goals and parameters are not clearly defined. The current method provides an adaptable framework that covers many barriers connected to inaccuracy and explicitness. Also, the author believes that the decisions made by the experts are relied upon their individualistic competence and are highly subjective. Therefore, it is better to display data with fuzzy numbers instead of definite numbers. The implementation steps of the fuzzy Delphi method are, in fact, a combination of performing the Delphi method and information analyses using the definitions of fuzzy set theory. The most important differences between the fuzzy Delphi method and the Delphi method are that in the fuzzy Delphi method, experts usually present their opinions in the form of verbal variables, then the means of the experts (numbers presented) and the amount of disagreement of each expert are calculated from the means and then this information is sent to the experts for new ideas. In the next stage, each expert presents a fresh idea or corrects his/her former idea depending on the information obtained from the former stage. This process continues until the mean of the fuzzy numbers becomes stable enough.

The researchers tracked some steps for the designing of the questionnaire. First, a detailed and comprehensive study of the relevant education literature was conducted following which several semi-structured interviews were laid with the related-field experts to uncover whether the obtained variables from the literature could be approved by the interviewees, and also to examine whether they could state other important variables which might be associated with the currently designed questionnaire. The tracking led to the construction of most items. Second, the items were handed out among several field experts for the evaluation of their redundancy, face validity, content validity, and education. Pilot testing was performed to enhance the validity and reliability of the items. The results obtained from the procedure resulted in some modifying revisions. Finally, a draft version of 80 items was constructed. The level of reliability was obtained through Cronbach's alpha test. The identified overall Cronbach's alpha was 0.89, which showed a good internal consistency of the questionnaire.

3. Results

In this research, to extract the indices and formulate a conceptual model using the research literature, dimensions, components, and initial index were identified, and the Delphi model was analyzed through the following steps:

3.1. Definition of Verbal Variables

The questionnaire for the current study is designed to obtain the experts' opinions about their agreement with the components and criteria of the proposed model, so the experts showed their agreements by such verbal variables as strongly disagree, disagree, neutral, agree, and strongly agree. Since different characteristics of individuals have an impact on their mental interpretations of qualitative variables, defining the range of qualitative variables led the experts to answer the questions with the same mentality. These variables are defined as fuzzy numbers which are given in Table 1.

Table 1. Triangular Fuzzy Numbers of Verbal Variables

Verbal Variables	Triangular Fuzzy Numbers	Definite Fuzzy Numbers
Strongly agree	(1, 0.25, 0)	0.9375
Agree	(0.75, 0.15, 0.15)	0.75
Neutral	(0.5, 0.25, 0.25)	0.5
Disagree	(0.25, 0.15, 0.15)	0.25
Strongly disagree	(0.25, 0, 0)	0.0625

The values of Table 1 are definite fuzzy numbers calculated using the Minkowski formula as follows:

$$\chi = m + \frac{\beta - \alpha}{4} \tag{1}$$

In the first stage of Delphi, the conceptual model and the semi-structured interview form were provided along with a description of the components, criteria, and sub-criteria sent to the expert groups, and a survey was conducted to determine whether they agreed or disagreed with each point of view, and their corrections were summarized as follows. The results of the study were presented according to the proposed options and linguistic variables defined in the questionnaire. According to the results of Table 2, the fuzzy mean of each of the dimensions and components has been calculated for the following equations:

$$A_{ave} = (m_1, m_2, m_3) = \left(\frac{1}{n} \sum_{i=1}^a a_1^i, \frac{1}{n} \sum_{i=1}^a a_2^i, \frac{1}{n} \sum_{i=1}^a a_3^i \right) \tag{2}$$

$$A_i = (a_1^i, a_2^i, a_3^i), i = 1, 2, 3, \dots, n \quad (3)$$

In this relation, A_i represents experts' opinions, and i , m , and A_{ave} represent the mean opinions of the experts. The results of these calculations are shown in Table 2.

Table 2. The Experts' Opinions on Dimensions and Components

Dimensions and Components	Fuzzy Mean
Education (0.8409)	
Design and implementation	0.8538
Learning and transferring	0.8280
Improvement (0.832)	
Interpersonal and functional relationships improvement	0.8219
Social, cultural, and professional improvement	0.8396
Systematic and ethical improvement of the work environment	0.8367
International improvement	0.8297
Information and communication technology improvement	0.8320

Table 2 shows experts' opinions obtained from the first survey on the dimensions and components of the study.

For a better explanation, the highest rate of expert agreement in the first stage of the survey for the dimension of education is related to the design and implementation of education, where the fuzzy mean of experts' opinions is 0.8538, and in the dimension of social and cultural improvement component, this value is 0.8396. Also, among other dimensions, the highest level of agreement related to education is 0.8409 which is noticeable.

3.2. The Second Phase of the Survey

The entire responses of the second phase are described below.

The results of the responses for the second phase of the Delphi surveys are presented in Table 3. The fuzzy mean of each component is calculated according to the relations of the first phase, which was mentioned earlier, with a mean of 0.8411 compared to the education dimension. This result in the first stage was the reverse of Delphi in the second stage. Also, in the second stage, for the education dimension, the design and implementation component of education is in the first place with a mean of 0.84, and for the improvement dimension, the social, cultural, and professional improvement component was found with a mean of 0.8521.

Based on the findings of Table 3, the highest level of experts' agreement in the second phase of the survey for

Table 3. The Experts' Opinions on Dimensions and Components

Dimensions and Components	Fuzzy Mean
Education (0.8373)	
Design and implementation	0.84
Learning and transferring	0.8345
Improvement (0.8411)	
Interpersonal and functional relationships improvement	0.8340
Interpersonal and functional relationships improvement	0.8521
Systematic and ethical improvement of the work environment	0.8266
International improvement	0.8516
Information and communication technology improvement	0.8411

the education dimension is related to the design and implementation of education, and for the dimension of improvement, the component of social, cultural, and professional improvement is seen. Also, among other dimensions, the highest level of agreement is related to the improvement dimension.

According to the opinions of experts, there is not much difference between the fuzzy mean of the first and second phases of the interview questionnaire. Therefore, there is no need to delete any questions.

The important point in comparing the two phases is that the priority of the experts in the first phase-oriented toward education, but this priority has changed in the second phase into the improvement dimension; however, Delphi implementation ceased at this phase since the disagreement among the respondents about the component indices was less than the threshold (0.1).

Based on the analysis obtained by the Delphi method to determine the dimensions and components of improving quality of education and the improvement of rural health workers' performance in Hormozgan, the entire identified components were confirmed in the Delphi phase, and the two dimensions of education and improvement, including two components with 29 indices as well as the improvement dimension, included 5 components for which 51 indices have been approved, and based on this analysis, the response to the question 'what are the dimensions and components of improving quality of education and the improvement of rural health workers' performance in Hormozgan' has been outlined in the following model:

Based on the Delphi analysis obtained from the experts' opinions, 2 dimensions, 7 components, and 80 indices have been identified.

4. Discussion

Given the increasing changes in human society and changing expectations of organizations, it seems that providing a single version of the model of both education and improvement is not sufficient for rural health workers. Meanwhile, the use of a native model, to a large extent, fills the existing gaps. The model presented in this article is able to provide the ground for improving the education and rural health workers' performance in Hormozgan and enable them to establish the plans and measures of improvement while dealing with the pathology of education and improvement of rural health workers' performance.

The results indicate that the priority of the experts in the first phase is oriented toward education, but this priority has changed in the second phase into the improvement dimension; however, Delphi implementation ceased at this phase since the disagreement among the respondents about the component indices were less than the threshold (0.1). It was further suggested that the experts had a considerable appreciation for the design and implementation of education in the first phase with a mean of 0.8538, followed by social, cultural, and professional improvement with a mean of 0.8396. Also, among other dimensions, the highest level of education agreement was 0.840. In the second phase, the education design and implementation component with a mean of 0.84 was in the first place. For the improvement component, the social, cultural, and professional improvement yielded a mean of 0.8521. Based on the analysis obtained by the Delphi method to determine the dimensions and components of quality improvement of education and the improvement of rural health workers' performance in Hormozgan, the entire identified components were confirmed in the Delphi phase and 2 dimensions of education and improvement, including two components with 29 indices as well as the improvement dimension, included 5 components for which 51 indices have been approved. The result of the current study is consistent with the studies of Ibrahim and Jaafar (19) and Khaef Elahi and Alipour Darvishi (20). The mentioned researchers also emphasized individual and organizational improvement. This study is also in line with Dehghan et al. (21), Shams Murakani and Daneshmandi (22), Moghadasi et al.'s (10) studies

4.1. Conclusion

Based on the findings of the study, it is suggested that: (1) evaluation levels, including evaluation of learning, evaluation of the impact of education on health workers' performance, and the necessity of those evaluations followed by the senior managers in the educational process and the results be used; (2) managers and supervisors should take

the apprentices into consideration and support the training courses for the practical transfer of their learning to the workplace, providing them with the required conditions for attending the courses, and also avoid holding intensive classes during the day or holding courses at inappropriate days and hours so as not to discourage learners from participation; (3) the education and improvement registrars should pay more and more expert attention to the changes and relocations of rural health workers in different positions and occupations, so that allow new educational and improvement needs of rural health workers are to be met, designed, and prioritized.

Footnotes

Authors' Contribution: Study design, data collection, and manuscript drafting, B.S.; Study design, data analysis and interpretation, and study revision, M.B. and N.G. The authors finally proofread and approved the manuscript.

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Ethical Approval: The present study was approved by the Ethics Committee of the Hormozgan University of Medical Sciences (No. 1398.362). Besides, participants were assured that the collected data would be used only for research, and the name of the participants would be kept confidential.

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