Performance Evaluation Factors: Designing an Instrument for National Health Network in Iran

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ABSTRACT

As a systematic process for gathering and analyzing data, performance evaluation could be used as a valid method to highlight levels of success and to identify strength and weakness of ongoing programs. The aim of the present study was to develop an instrument for evaluating rural health centers in Iran. Based on related literature and experts' views, eight crucial fields of performance evaluation, and a questionnaire including 100 items were formed. The participants of the study were 525 people having health related jobs in rural or urban health centers. Reliability and validity requirements were checked; exploratory and confirmatory factor analyses were used. Factor analysis identified 11 components which embraced 60 items. Components were named as planning, control, coordination, structure, setting and facilities, education, customers' satisfaction, staff's job satisfaction, disease surveillance, mother-child care, and effectiveness which are presented as a model for performance evaluation. The obtained instrument embraces all required factors suggested by experts and literature hence it can be used as an evaluation instrument in both rural and urban health centers.

Keywords*: Performance evaluation, health centers, experts' views*
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INTRODUCTION

As a systematic process for gathering and analyzing data, performance evaluation could be used as a valid method to highlight levels of success and to identify the strength and weakness of ongoing programs [1]. Performance evaluation in health organizations is a multidimensional issue, so the importance of each dimension index is dependent on the results of indices [1, 2].

The study of organization issues is not separate from measurement instruments and methods since all organizations, even organizations which are at risk also benefit from performance evaluation instruments [3]. In fact, identifying and implementing a comprehensive performance evaluation increase the quality of services, effectiveness and efficiency of health system, hence in health organizations performance evaluation is outstandingly important and has attracted researchers' attention[4, 5].

For monitoring health system, some frameworks have been structured around five domains of context, the development process, design, implementation and effects [6]. Quality of information data [7], understanding subjects, performance alignment, individual services, accepting societies [8], effectiveness (health conditions, accessibility, patients' satisfaction), justice (vulnerable groups, evaluating risk and providing feedback), and efficiency (investing benefit cost, management ways) [9] are factors identified by other studies. The complexity of

health problems, non-centralizations, geographical distances, ethnical differences, and lack of trustable information resources are among the factors identified by Degroff et al. [10]. However, in evaluation of health center performance, particular factors are ranked differently; in the study conducted by Moslehi et al., quality planning is ranked as the most important, and tracing complaints as the least important indices [11].

That performance measures in health care embraces a combination of clinical quality, patient (or member) satisfaction, efficiency, utilization and financial performance is the common ground for most health systems; however, how a balanced selection of measures, the implementation phases, and uses of these measures to obtain both external accountability and internal quality improvement are matters [12].

On the one hand, the complexity of present health organizations, increasing health and treatment costs, specializational trends, prioritizing customers, and the importance of effectiveness and efficiency of services are among the factors that encourage health organizations to recourse to performance evaluation [9, 13]. For example, besides highlighting the importance of continuous organization evaluation in studies done by Wong et al. [14], Amado and Santos [15] and also Lee Choi [8], there is an emphasis on presenting evaluation performance framework. Therefore, since evaluation as a process judges the effectiveness of predetermined programs, special frameworks should be introduced.

On the other hand, different models have been suggested for evaluating performance in organizations that provide health services, while each model is characterized by unique elements.

The importance of workforce in performing services also matters. Health workers number, quality and type of professionalism determine output and productivity because they manage other resources. The literature has reported problems relating to service provision due to poor performance of health workers [16, 17].

Expectedly, and in line with mentioned controversies as well as common grounds, Iranian health leadership is also well informed about evaluation importance and its positive effect on health performance effectiveness; however, the literature of Iranian health center is almost empty of any unified and comprehensive instrument for measuring performance in rural health centers. In fact, some steps have been taken in Iran and a handful of evaluation models have been suggested [10] ; however, the place for a standard instrument to assess health staff's performance is vacant. A unified instrument based on health experts' views could be an effective step toward enhancing health and treatment services thereby a more objective evaluation of performance will be attained.

2. The context of the study

In Iran, The Ministry of Health and Medical Education is missioned to provide health, and treatment services for all people through planning and implementing health, treatment and medical education at a national-level health policy. At provincial level, this responsibility is done by universities, hospitals, colleges and research institutes since at least each province has one medical university. In fact, the president of the medical university is in charge of public health, health care provision in public facilities, and medical education. Then, at city level, city hospitals as well as rural and urban health centers shoulder the responsibility of providing services. Through a referral system, first there are primary care centers, and then there are secondary-level hospitals in capital, and finally tertiary hospitals in major cities [18].

Respecting the three mentioned levels, the evaluation of secondary and tertiary levels is done by Provision and Accreditation Office of Health Ministry; the available evaluation tools are also made based on literature reviews and professional experts views that are piloted at hospitals. Tehran University of Medical Sciences, Iran University of Medical Sciences and Shahid Beheshty University of Medical Sciences as well as pilot universities cooperatively develop the evaluation instrument [19]. However, for evaluation of the first level, which includes health centers, there is no formal and objective instrument. As each center develops and uses its own particular instrument. In the present study, rural health center is the only state-run unit in rural areas which is usually managed by a GP [20].

MATERIALS AND METHODS

The aim of the present cross-sectional and descriptive study was to develop an instrument for evaluating rural health centers in Iran. The participants of the study were 525 people having health related jobs in rural or urban health centers. Participants were both male (60%) and female (40%); about 48% of the participants held BA degrees and 13/3% were GPs. About 50% of the population had more than 10 years of experience. All health staff worked in health centers (more than 32% worked in urban centers and 20% worked in rural centers). To follow the aims of the study, the following 5 steps were taken in spring, 2014.

First, investigating the related literature and sites like Google Scholar, PubMed, Iran Medex, Ovi, Eric, Web of Science, SID, and Magiran, the domains and fields of the instrument were identified [7-11, 13, 14].

Second, regarding the eight fields of management, structure, space and facilities, education, customers' satisfaction, staff satisfaction, the scope of services and effectiveness, 23 open-ended questions were formed. Thirty health experts including health management professors, managers of rural health centers, and managers of urban health centers, were asked to answer the questions. Coding, classifications and numbering the views ended in 145 preliminary items.

Third, to check the validity status of the items, 10 health management professors were invited to provide their views regarding the internal consistency between each item and its field and next validity steps.

Item impact method was also used to delete or modify weak items. The five-scale Likert rating (highly recommended, recommended, average, a little recommended and not recommended) was considered for each item. Content Validity Ratio (CVR) as well as Content Validity Indices (CVI) were used to obtain content validity. The consulted experts rated each item according to a three-scale format (necessary, useful but not necessary). Then, the answers were calculated according to formula 1 [21, 22].

Formula 1. Calculating content validity ratio

$$CVR=[ne-(N/2)]/[N/2]$$
ne: *Number of specialists who chose the "necessary" item*
N: *Total number of specialists*

According to LAWshe classification, items which received values above .62 were kept [23]. To obtain more validity, Waltz and Basell method was also used [24]. Regarding clarity and simplicity, according to a 4-scale measure [25], items which obtained values above .79 were kept; those with values between .70 to .79 were modified, and items with value below .70 were deleted [26].

Formula 2. Calculating content validity index

$$CVI= \frac{Number\ of\ specialists\ agreeing\ with\ items\ 3\ \&\ 4}{Total\ number\ of\ specialists}$$

Forth, to measure the construct validity of the items, exploratory and confirmatory factor analyses were used.

Fifth, to obtain the reliability of the questionnaire, all 12 health centers in rural and urban which were within the researchers' reach were selected. To determine the reliability and correlation, the questionnaire was test-retested with a time interval of two weeks.

RESULTS

The mentioned steps ended in a 145-item questionnaire which followed basic indices related to reliability and validity measures. Out of 145 items, 100 items had a CVR above .62 while 45 items had CVR below .62 and were omitted. Regarding CVI, 75 items had CVI above 80% and were kept, but 25 items which had CVIs between .70 to .80, were modified.

To gather data, 700 questionnaires were sent to people in 5 provinces (Isfahan, Khuzestan, Kermanshah, Gilan, Mashhad), but just 525 questionnaires were returned. In fact, the health staff's answers to 525 questionnaires were subjected to statistical analysis using SPSS soft-wares.

The results of KMO and Bartlett's test revealed a sampling adequacy of .95, as *p* =.000. Anti-image correlation showed that 19 items had correlations more than 5. There were some similarities between communalities for selected items and original classification of items; however, there were some differences. For example, questions which remained from performance evaluation fields were divided into three factors, and items remained from services were divided into two factors. Furthermore, since factors 12 and 19 were one-item factors which shared their contents with other items, these items were deleted. In other words, the original 100-item questionnaire which included 8 fields ended in a 60-item questionnaire which embraced 11 components (Table 1).

Table 1. The results of extracted factors and variances

Rotation Sums of Squared Loadings			Extraction Sums of Squared Loadings			Initial Eigenvalues			Factor
Cumulative %	% of Variance	Total	Cumulative %	% of Variance	Total	Cumulative %	% of Variance	Total	
7.76	7.76	7.76	29.69	29.69	29.69	29.69	29.69	29.69	1
14.53	6.77	6.77	34.43	4.74	4.74	34.43	4.74	4.74	2
20.38	5.84	5.84	39.07	4.63	4.63	39.07	4.63	4.63	3
25.99	5.61	5.61	42.69	3.62	3.62	42.69	3.62	3.62	4
30.80	4.80	4.80	45.69	3.00	3.00	45.69	3.00	3.00	5
35.58	4.78	4.78	47.92	2.23	2.23	47.92	2.23	2.23	6
40.25	4.66	4.66	50.10	2.17	2.17	50.10	2.17	2.17	7
44.75	4.49	4.49	51.83	1.72	1.72	51.83	1.72	1.727	8
47.73	2.98	2.98	53.45	1.62	1.62	53.45	1.62	1.62	9
50.48	2.74	2.74	55.01	1.55	1.55	55.01	1.55	1.55	10
53.14	2.66	2.66	56.42	1.41	1.41	56.42	1.41	1.41	11
55.33	2.18	2.18	57.69	1.26	1.26	57.69	1.26	1.263	12
57.34	2.01	2.01	58.91	1.22	1.22	58.91	1.22	1.22	13
59.02	1.67	1.67	60.09	1.18	1.18	60.09	1.18	1.18	14
60.40	1.37	1.37	61.23	1.13	1.13	61.23	1.13	1.13	15
61.73	1.33	1.33	62.34	1.10	1.10	62.34	1.10	1.10	16
63.00	1.26	1.26	63.39	1.05	1.05	63.39	1.05	1.05	17
64.23	1.23	1.23	64.42	1.03	1.03	64.42	1.03	1.03	18
65.42	1.19	1.19	65.42	1.00	1.00	65.42	1.00	1.00	19

All the obtained components were named as 11 factors of planning, control, coordination, structure, setting and facilities, education, customers' satisfaction, staff's job satisfaction, disease surveillance, mother-child care, and effectiveness.

For the next step, the internal consistency between the items was checked. The results of correlation analysis suggested that there was a significant correlation between all components. The highest correlation was between diseases surveillance and mother-child care components (as R= .71) and lowest correlation was between planning and cost components (as R=.107). Cronbach's Alpha was also used to check the reliability of the results (Table 2). The obtained values suggested that all fields were reliable as a reliability of .965 for the whole questionnaire was obtained.

Table 2. Cronbach's alpha analysis results

Items	Cronbach's alpha	Factor
3	.82	plannig
2	.48	control
2	.61	coordination
9	.94	structure
7	.87	Education
6	.83	setting and facilities
9	.90	staff's job satisfaction
6	.92	customers satisfaction
5	.88	Mother-child care
5	.88	surviliance disease
6	.88	eefectiveness
60	.96	total

Using lisrel 8.7 software, confirmatory factor analysis was used in order to verify the fitness of the factors achieved by the explanatory factor analysis. The path diagram was designed (Figure 1). As fitness indices of NFI=0.80, RFI=0.80 , IFI=0.86 CFI=0.86, are all above .8, and the RMSEA index is .066 and less than .8, the model could be considered as a proper one [27].
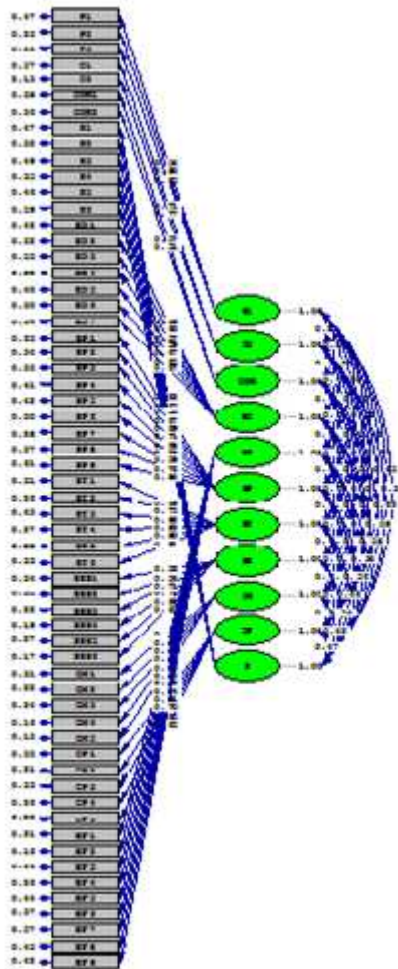
Figure 1. The results of confirmatory factor analysis
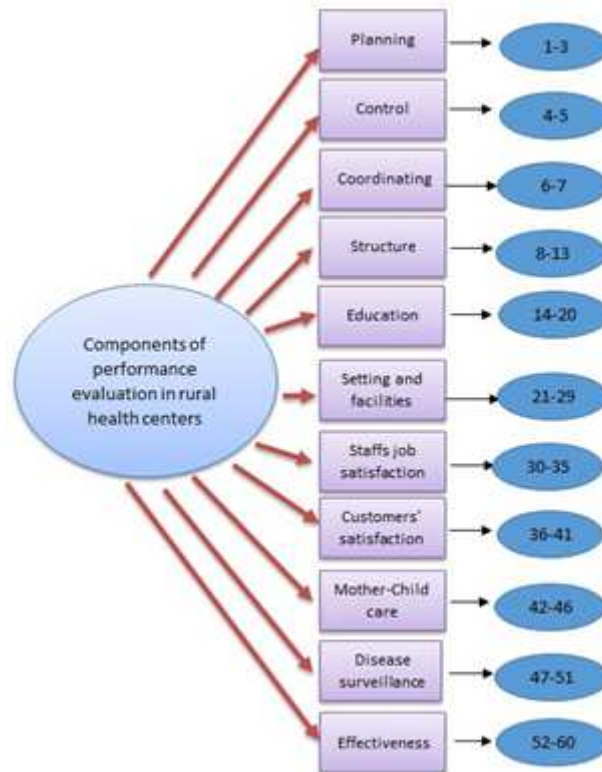

Figure 2. Components of performance evaluation in rural health system

Since the obtained model had a 1655 freedom degree, chi-square index was obtained which revealed that the model does not fit well with the data as significant level was .ooo. However, since the model contains many variables, such results were expected.

At the end, to check the reliability of the model, 12 health centers were included and the obtained data were checked through test-retest method with a time internal of two weeks. The results suggested a high reliability for the model. Expectedly, the highest reliability level belonged to mother-child care components (87%) and the lowest reliability belonged to setting and facility components (56%). Despite the high reliability of all components, regarding test-retest results, there was no reliability between the two tests for coordinating component. The 11-factor model is illustrated in the following figure.

DISCUSSION

Regarding their aims and priorities, different organizations use different evaluation methods and tools because performance evaluations, as an important component of health care processes, enhance health results through providing evaluation feedbacks [2]. Following health care system aims, the present study investigated health staff's views to suggest an instrument for evaluating hearth performance. The obtained instrument included 11 factors of planning, control, coordination, structure, education, setting and facilities, staff's job satisfaction, customers' satisfaction, mother-child care, disease surveillance, effectiveness (Figure 2).

Planning-related questions like "What are we doing and what should we do to achieve our goals?" provide health-program administrators with information on progress toward organizational goals and identifying parts of the program that are working well and investing on those types of the programs that help an organization meet its objectives [12, 28]; planning is even ranked as the most important factor objectives [12, 28]. Related to planning, factor of control is one of the health manager's duties, so that managers get sure that organizations' performance matches the planned programs [29]. Related to the second factor, other studies have also found that control is one of the components of evaluation and have suggested that since indicators and frameworks for monitoring and evaluating are not defined prior to interventions, monitoring and evaluation need more attention [30, 31], and control.

This study also found structure as the next component. In fact, as organization structure officially divides, classifies and adjusts duties, it is not an inseparable part of organizations [32].

Included in the findings of the present study is the factor of coordination. Coordination is a process that aligns objectives, and activities in different parts of an organization so that goals can be obtained [31]. Similarly, coordinating performance measures is identified and referred to as a challenge for internal management and quality improvement use [28].

Regarding factors of structure and effectiveness which are highlighted in the present study, Nerenz and Neil mention several major domains of performance measurement in measurement systems [12]. The first domain is quality of care that includes factors like structure (characteristics of a hospital, health plan, or health care system) and outcome (measurable change in the health status of a person or group of people) [28]. Similarly, it is equally important to monitor and evaluate the process of implementation and the financial and technical inputs, as both determine the success of plans and policies [31].

In line with WHO's essential health standards, the results of the present study found setting and facilities as crucial factors in evaluating health center performance. According to WHO, in assessing setting issues like standards (requirements to achieve minimum essential environmental health conditions and guidelines practices to achieve desirable minimum environmental health standards in health-care settings) should be considered. Health centers are required to plan new health-care settings or improve existing ones; to ensure that the construction of new health-care settings is of acceptable quality, and to monitor ongoing maintenance of facilities.

While there is significant evidence that the level of education impacts health status, a more vital issue in health centers targets educational programs and plans. In line with health system improvement is encouraging life-long learning that contribute to training both health service providers and receivers [12]. In smaller settings, health-care workers may also be required to perform medical and non-medical tasks, including operating and maintaining environmental health facilities [30]. In fact monitoring and evaluation should not be limited to indicators at the level of effects and outputs of interventions, and training since satisfaction is another outstanding factor.

In line with the next factors of staff's job satisfaction and customers' satisfaction, which are extracted as findings of present study, improved performance is assessed by the availability of staff, as well as their capabilities, productivity and responsiveness [16]. These indicators should have quantitative and qualitative manifestations. In fact, satisfaction is a component of quality domain (usually viewed as an outcome measure), although it is often handled separately (e.g., adverse event rates handled by the QA or QI department; satisfaction handled by the Marketing department) [28, 31] Health workers' number, quality and type of professionalism determine output and productivity. As a large part of the health budget is spent on health workers they greatly influence progress (JLI, 2004). Even some articles and documents have illustrated problems relating to service provision that happen because of poor performance of health workers [30, 31].

Next, mother-child care was found as another factor. Similar to this finding, increasing mother-child care coverage is one of the most important objectives in health system, hence in evaluating health centers this issue plays roles [33]; therefore, it seems also necessary to include this factor in performance evaluation framework in Iran.

The present study also highlighted disease surveillance as another vital component for performance evaluation. Surveillance and evaluation are parallel processes that can be conducted simultaneously. Evaluation may supplement surveillance data by providing tailored information to answer specific questions about a program. Data obtained from particular questions in an evaluation process can be more flexible than surveillance, therefore it is possible assess programs more deeply. In fact, surveillance information can be completed by some surveys to evaluate how a program is implemented and to report the effects of a particular program on participants' knowledge, attitudes, and behavior. Moreover, evaluators may implement qualitative methods (e.g., focus groups, semi-structured or open-ended interviews) to achieve more information related to the strengths and weaknesses of a particular program [12].

Likewise, the requirement of using a unified evaluation instrument besides continuous assessment is suggested in the literature of health system evaluation (for example in [14], [15] and [8]). That is why the present integrative evaluation instrument may further highlight the importance of evaluation, if it is possibly implemented in evaluating and decision making phases.

CONCLUSION

In this complex, rapidly changing health contexts, decision-makers have to connect observed results to certain plans, and acts. No doubts, the most immediate measures for understanding attribution or contribution of obtained results of specific programs are evaluation measures. Moreover, through evaluation even policies and plans that match health-related challenges can be highlighted. As performance evaluation has been viewed as a multidimensional issue, the ways through which data is collected and the sources of data are outstanding challenges. However, a framework for monitoring and evaluation health system may illustrate the dynamic connection between the domains and the different pillars of an organization and wider societal contexts [6].

The findings of the present study which are based on experts' and experienced people's views working in Iranian Health System, finally ended in an evaluation instrument for health performance in rural health centers. The suggested instrument has passed meticulous reliability and validity tests. Although the hypothesis that performance evaluation must meet contextual health needs is acceptable, the present instrument embraces 11 major factors of planning, control, structure, setting and facilities, training, customers satisfaction that can be locally modified to adopt particular settings; hence, it is not exclusively bounded to rural health centers performance.

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