Received 2016-01-15

Revised 2016-02-01

Accepted 2016-02-28

Evaluating the Feasibility of Financial Variables of Health: A Hospital Administrator's Viewpoint

Abasat Mirzaei¹, Seyed Jamaledin Tabibi^{2✉}, Amir Ashkan Nasiripour³,
Leila Riahi³

¹Health Services Management, Science and Research Branch, Islamic Azad University, Tehran, Iran

²Health Services Management Department, Faculty of Management and Economics, Science and Research Branch, Islamic Azad University, Tehran, Iran

³Health Services Management Department, Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract

Background: Analysis of costs and incomes and analyzing the relationship between current and capital expenditures, attention to cost recovery and changes in investment patterns are of utmost importance in the economy of hospitals. The effective use of financial variables and subsequently performance evaluation of hospitals would help to facilitate the continuation of activities which provides the ground for the economic administration of hospital industry. The purpose of this study was to evaluate the viewpoints of executive administrators of hospitals in Iran to evaluate the feasibility of using financial variables of health in hospitals. **Material and Methods:** The present study was an applied research which is conducted using AHP (Analytical Hierarchy Process) technique. After extracting the evaluation variables, the financial performance of hospitals was evaluated using the questionnaire which was confirmed by Cronbach's Alpha equal to 0.85. Moreover, the group of experts in this study included 62 Iranian hospital administrators. **Results:** Global indices for the economic evaluation of hospitals were identified which were categorized into 9 domains/factors using AHP (Analytical Hierarchy Process); furthermore, they were prioritized regarding the importance and feasibility in hospitals. **Conclusion:** Utilizing financial variables in evaluating the economic performance of hospitals can determine their economic growth. Moreover, analysis of the current status of hospitals can be used to make strategic decisions and provides a basis for comparisons between hospitals and their rankings. [GMJ. 2016;5(1):25-30]

Keywords: Hospital Evaluation; Financial Variables of Health; Hospital Administrators

Introduction

Effective administration of hospitals as the largest providers of healthcare services has always attracted the attention of policy makers in this area; thus, maximum use of available resources is essential in using management strategies [1]. The complexity of cur-

rent healthcare organizations, increasing costs of health care, professionalism, customer-orientation and the importance of efficiency and effectiveness of services are factors that encourage healthcare organizations towards the development of performance evaluation [2]. Managers and policymakers in the health care sector should have enough knowledge

GMJ

©2013 Galen Medical Journal

Fax: +98 731 2227091

PO Box 7461686688

Email: info@gmj.ir

✉ Correspondence to:

Seyed Jamaledin Tabibi, Faculty of Management and Economics, Science and Research Branch, Islamic Azad University, Tehran, Iran
Telephone Number: +982133331012
Email Address: sjtabibi@yahoo.com

and awareness of how to expend the financial resources available and control the total costs of various types of health care services. In recent years, poor management of healthcare centers, the inefficiency of health care system and increased operating costs have resulted in a waste of resources including money, human resources, buildings and equipment. Such losses mean that creating a certain level of services or outputs could be achieved with fewer resources. A precise economic monitoring and evaluation system is one of the main tools of an effective manager so that through correct utilization of the outcomes, they become able to direct and lead the organization to achieve its maximum working efficiency in the best possible way [3].

Economic problem is one of the biggest problems that healthcare providers encounter in this respect [4] and hospitals as the largest and the most important healthcare providers in the health sector have a considerable sensitivity, so that their inefficient organization will reduce the overall potential positive effect of health system on human population health [5]. Nowadays, the performance of public and private hospitals in Iran is affected by various variables within the organizations in a way that the performance of hospitals in public sector has undergone complex organizational structure, massive administrative regulations, centralized decision-making, unprincipled budgeting processes, limited managerial authority in making financial and personnel-related decisions, resistance to change, lack of competition in public sector and incomplete and sometimes unreal information; while the performance of hospitals in private sector is affected by the goals of shareholders, profitability and return on investment and to respond to the shareholders, the management evaluated the efficiency of existing resources finally leading to the efflorescence of cycle of profit evaluation and its maximization [6]. A lot of hospital expenses are due to the improper performance of hospitals. Variables such as improper reception of patients, low bed occupancy rate, the tendency to long-term hospitalization, inappropriate allocation of resources, duplication, etc. are involved in creating such extra costs [7].

In the past, the performance of healthcare

organizations was evaluated through healthcare indices and the quality of services was only insured through the technical knowledge of medical and nursing specialists. However, nowadays, healthcare organizations are complex in a way that it necessitates strong support by the management in the field of performance evaluation [8]. Evidence shows that accounting system can be used in the organization but it is not utilized as a mechanism for control or accountability [9]. On the other hand, it has been observed that massive amounts of financial data produced in organizations mislead managers rather than facilitate their decision-making processes [10]. Therefore, organizations and health care centers, in particular, require a more appropriate and professional financial management to tackle actively with financial obstacles and achieve their goals in an efficient and effective manner [11]. The necessity to interpret financial statements in a way that meets the needs of its users leads to the emergence and development of methods and techniques which determine the relationships between the listed numbers in financial statements and lay the ground to compare, interpret and justify them [12].

Poor administration of hospitals leads to waste of resources including money, human resource, buildings and equipment. Such a waste means that a certain proportion of services (outputs) can be achieved with fewer resources and through preventing the waste of human and financial resources; they can be used in providing better, higher-quality and lower-cost services. Studies have indicated that more than half of national health resources are wasted in different countries, and limited resources are inefficiently used in developing countries, and public funds are spent on services with no proportionality and effectiveness; therefore, to ensure the provision of such services requires performance evaluation of the healthcare sector. Through performance assessment in this area and minimizing the waste of resources, governments will not have much difficulty in managing public health [13]. Thus, the purpose of this study was to evaluate the viewpoints of hospital administrators in Iran to evaluate the feasibility of using financial variables of health in hospitals.

Material and Methods

The present study was conducted quantitatively using AHP (Analytical Hierarchy Process) technique. A systematic review was used to develop the theoretical foundations of this study. Regarding research studies, it is the retrospective and library-based study which investigates the theoretical and practical issues of evaluating financial indices in hospitals which were conducted and published in a period from 1996 to 2015. Financial evaluation variables and indices were identified based on examining domestic and international literature and focus group discussions and then the reviewed literature was employed to categorize the indices inappropriate performance domains. Afterwards, a paired-comparison questionnaire was developed, the reliability and validity of which were confirmed by experts with a Cronbach's Alpha 0.85 and in the next phase 62 experts answered the items regarding feasibility importance. Finally, the data elicited was rated and prioritized via AHP.

Results

One hundred and eight financial evaluation indices were identified for hospitals by examining domestic and international literature and focus group discussions. As it was mentioned in the third phase, the reviewed literature was used to categorize the indices inappropriate performance domains, and the identified indices were categorized into 9 performance domains according to Figure 1 as follows; 11 indices in the domain of profitability, 6 indices in liquidity, 21 indices in income, 25 indices in the area of cost, 11 indices in capital struc-

ture, 14 indices in asset performance and 20 indices in the areas of management and contingent financial ratios.

A matrix of paired comparison was formed of the components affecting financial performance of hospitals, and then the paired-comparison questionnaire was compared and rated from the viewpoint of hospital administrators regarding the importance and feasibility of financial variables of health which are presented in Table 1.

Data from paired-comparison questionnaire of financial health indices were collected extracted and weighted in terms of importance and feasibility in hospitals using AHP technique as follows (Figure 2).

According to findings illustrated in Figure 2, the highest priority was related to profitability index rated 0.246 among 9 financial variables affecting financial performance elicited from the viewpoints of the studied samples. The lowest priority was related to contingency indices rated 0.010.

Figure 1. Classification of Financial Evaluation Indices of Hospitals

Figure 2. Weighting Financial Performance Indices of Hospitals Regarding Feasibility Importance and Capability

Table 1. A Matrix of Paired Comparison for the Components Affecting Financial Performance of Hospitals

	Profitability	Liquidity	Capital structure	Quick ratio	Income	Cost	Exploitation	Efficiency-asset ratio	Contingency financial ratios
Profitability Index	1.00	21.00	-0.11	3.00	21.00	-3.00	17.00	-5.00	19.00
Liquidity Index	0.05	1.00	3.00	15.00	-17.00	-11.00	-23.00	-23.00	11.00
Capital structure indices	-0.09	0.33	1.00	-9.00	21.00	-5.00	-23.00	-23.00	13.00
quick ratio (acid test)	0.33	0.07	-0.11	1.00	27.00	-7.00	-17.00	-21.00	17.00
Income indices	0.05	-0.06	0.05	0.04	1.00	19	21.00	17.00	17.00
Cost indices	-0.33	-0.09	-0.20	-0.14	0.05	1.00	-21.00	15.00	17.00
Exploitation indices	0.06	-0.04	-0.04	-0.06	0.05	-5.00	1.00	17.00	21.00
Efficiency- asset ratio	-0.20	-0.04	-0.04	-0.05	0.06	0.07	0.06	1.00	21.00
Other financial ratios	0.05	0.09	0.08	0.06	0.06	0.06	0.05	0.05	1.00

Discussion

Evaluation and analysis of growth and development of hospitals are considered a scientific strategy in developing countries using efficient financial indices, and there have been numerous studies in which financial indices have been selected based on the characteristics of each hospital [14]. Generally, in the field of financial performance evaluation, each new developed method has had an evolutionary process aimed at improving and meeting the problems of previous health variables [15].

In a study by Lau *et al.*, 6 indices were identified as the most important financial indices for healthcare decision-makers [16]. In another investigation by Pink *et al.*, 9 indices in five performance dimensions were introduced as key indices for intensive care units in hospitals [17]. In a study by Watson, Canadian management information system was accepted as the data source for the calculation and comparison of financial indices in intensive care units of hospitals in the state of Manny [18]. In a study in Tabriz in Iran, a modern financial system was used as the data source to achieve the real value of each index in educational hospitals [14]. Barack in a study revealed cash and accrual ratios for organizational performance evaluation by investigating the increasing information content [19]. Holmes *et al.* in their study classified final indices into 6 dimensions of profitability, liquidity, capital structure, income and exploitation [20]. In another study conducted by Bazoli *et al.* in the hospitals of 11 American states, financial components were classified into the domain of final costs of activity and profitability indices of hospitals. The results of their study confirmed the relationship between financial status and service quality [21]. However, the present study was more comprehensive in terms of identification and elicitation of financial indices compared to the studies conducted by Bazoli, Barack and Lau.

Given the results of other investigations including Pink (2009), Holmes (2007) and Watkins (2000)[17, 19, 21], the indices in this

study were classified into 9 domains based on the dimensions of financial performance including the indices of profitability, liquidity, capital structure, quick ratio (acid test), income, cost, exploitation, management ratios, as well as contingency ratio. Moreover, in the study done by Pink, other indices introduced in other industries were taken into account; the present study examined only the investigations conducted in the field of healthcare. Another difference of this study was the evaluation of the feasibility of using economic indices of health in hospitals.

In conclusion, the evaluation of financial indices which are important in the viewpoint of administrators can be a turning point in analyzing the performance status of hospital administrators and ranking the financial performance of hospitals.

The nature of each hospital needs to be considered in comparing financial results with other hospitals; these limitations and differences among hospitals include difficulty in comparing various hospitals due to possible differences in organizational mission, accounting practices, inflation effect and conceptual differences of comparisons among different hospitals.

Conclusion

Using performance evaluation indices of hospitals, administrators can operationalize the economic management of hospitals and make efficient decisions for its optimal administration. Finally, by ranking hospitals based on economic performance and creating a competitive environment for production and hospital service provision, they can improve the growth rate of healthcare services.

Conflict of Interests

The authors report that there is no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

References

1. Gholizadeh M, Jafari M, Janati A, Hosseini S. To analysis the expense of the health services in the Health and Treatment Centers of the Tabriz in 2008. *The picture of the health* 2012; 3(1): 33-40.
2. Farzandi Pour M, Asefzade S, Rabiee R. The degree of the compliance to standards of the medical documents unit of the hospitals of Kashan- 2004. *The Feyzscientific and research journal of the Medical Science of Kashan University* 2006; 10(3): 33-28.
3. MohtashamAmiri Z, RahimiKolameroodi H, Davoodi A. To analysis the expense of the rural and urban health and treatment centers of the Gilan province. *The journal of the medical science of the Gilan University* 2008; 67(17): 32-24.
4. Suarez V, Lesneski C, Denison D. Making the Case for Using Financial Indicators in Local Public Health Agencies. *Am J Public Health* 2011; 101 (3): 419-25.
5. Pizzini MJ. The relation between cost-system design, managers' evaluations of the relevance and usefulness of cost data, and financial performance: an empirical study of US hospitals. *Accounting, Organizations and Society* 2006; 31(2): 179-210.
6. YazdanPanahi Z, Pour Yazdanparast L, Haghpanah S, Haji Foughaha M. To evaluate the function of the midwives who work in the offices related to the compliance to the professional standards and the effectiveness of the training and permanent evaluation of them in Shiraz. *The scientific journal of the Medical Discipline Organization of the Islamic Republic of Iran* 2009; 37(1): 31-5.
7. KaramiMatin B. To evaluate the efficacy of the general training hospitals of the medical science university of Kermanshah, *Health Management Journal* 2000; 4(8): 30-9.
8. Smith PC, Elias Mossialos E, Papanicolas I. Principles of performance measurement. *Euro Observer* 2008; 10(1): 1-4.
9. Cleverley WO, Cleverley JO. Scorecards and dashboards: using financial metrics to improve performance. *Healthcare financial management: journal of the Healthcare Financial Management Association* 2005; 59(7): 64-9.
10. Watson D, Finlayson G, Jacobs P. Comparing apples to apples: the relative financial performance of Manitoba's acute care hospitals. *Healthcare management forum* 2002; 39-46.
11. Novick LF, Morrow CB, Mays GP. *Public health administration: principles for population-based management*. 2 ed. Subbury, Massachusetts: Jones & Bartlett Publishers 2008.
12. Groene O, Skau JK, Frølich A. An international review of projects on hospital performance assessment. *Int J Qual Health Care* 2008; 20 (3): 162-71.
13. Abdolahian H, Shariati S, ShoushtariZade E. The measurement of the function of the rural management in Iran based on the effective factors on the process of management in the villages of Iran. *The quarterly periodical of Human Science Modares* 2007; 3(46): 227-67.
14. Janati A, Valizadeh S, Asghari-Jafarabadi M. Development of Financial Indicators of Hospital Performance. *Journal of Clinical Research & Governance* 2014; 3: 92-8.
15. Vandenberg H. *Models of Intellectual Capital Valuation: A Comparative Evaluation*. 2003.
16. Love D, Revere L, Black K. A Current Look at the Key Performance Measures Considered Critical by Health Care Leaders. *JOURNAL OF HEALTH CARE FINANCE* 2008; 34(3): 19-33.
17. Pink GH, Holmes GM, D'Alpe C, Strunk LA, McGee P, Slifkin RT. Financial indicators for critical access hospitals. *Journal of Rural Health* 2006; 22(3): 229-36.
18. Barak AZ. Cash Flow Ratiosvs. Accruals Ratios: Empirical Research onIncremental Information Content. *TheBusiness Review* 2010; 15: 206-13.
19. Holmes GM, Pink GH, Thompson RE, Slifkin RT. Variations in financial performance among peer groups of critical access hospitals. *Journal of Rural Health* 2007; 23(4): 299-305.
20. Bazzoli GJ, Chen HF, Zhao M, Lindrooth RC. Hospital financial condition and the quality of patient care. *Health Econ* 2008; 17(8): 977-95.
21. Watkins AL. Hospital financial ratio classification patterns revisited: Upon considering nonfinancial information. *Journal of Accounting and Public Policy* 2000; 19(1): 73-95.