



The Hospital Cost Reduction Strategies from the Managers' Point of View: A Qualitative Study in Iran

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Received 2023 May 15; Revised 2023 November 27; Accepted 2023 December 25.

Abstract

Background: Nowadays, hospitals are increasingly facing a shortage of resources, posing a significant challenge. This situation has led to competition, where a successful organization is defined by its ability to cut costs while upholding the quality of services.

Objectives: This study aimed to identify cost reduction strategies from the viewpoint of hospital managers in Tehran Province, Iran.

Methods: This qualitative study was performed between April and September 2021 in Tehran Province, Iran. The data were collected using in-depth semi-structured interviews with 24 managers of public and private hospitals affiliated with Iran University of Medical Sciences. The participants were selected using purposive sampling. The obtained data were analyzed using the content analysis method in NVivo 10 software.

Results: Through analyzing the interviews conducted with aware key participants, cost reduction strategies were presented in 3 themes, 10 categories, and 42 subcategories. Key themes for cost reduction strategies include human resources in 4 categories, management and organization in 4 subcategories, and building equipment and facilities in 2 subcategories.

Conclusions: Policymakers, especially hospital managers, can cut costs by adding economic insight into health services and providing a platform to increase efficiency and optimal use of available resources. Formulation of strategies in the field of human resources management, equipment and construction facilities, and organization of hospitals can play a significant role in reducing hospital costs and achieving the goals of the health system.

Keywords: Costs and Cost Analysis, Financial Management, Hospitals, Strategy, Efficiency, Iran

1. Background

Due to their wide function and the use of a large part of the resources allocated, hospitals are recognized as the costliest operating units in the health system. Efforts to improve the quality of patient care, increasing health costs, and competition are among the factors that require hospitals to manage their costs (1). In developing countries, between 50% and 80% of health care resources are consumed by hospitals and it seems logical that a considerable part of the economic studies of health services should focus on the hospital (2, 3). One of the ways to economically control hospitals is to identify the costs that have become a crisis today, and experts are looking for original solutions to control and limit them and thus

improve hospital revenues (4, 5). Spitzer et al. showed that hospital costs were comprised of resources, depreciation, interest and loans, and staff salaries (6).

Many studies in Iran have pointed to hospital costs. For example, Olyan Ajam et al. extracted some strategies to manage hospital costs, such as setting up a costing system, forming a working group, monitoring and controlling, establishing internal rules and regulations, identifying cost centers, and operational planning (7). Koshki et al. examined hospital costs, including human resources, medication, medical and non-medical consumables, depreciation, energy, food, and public services. The cost of human resources, medicine, and medical consumables contributed to most of the hospital costs (8). Hammad et

al. and Kazemi et al. also showed similar results (9, 10).

According to the World Bank's report from April 2023, the current health expenditure of the Iranian government as a percentage of gross domestic product (GDP) has grown from 4.72% in 2000 to 5.34% in 2020 (11). Considering the large contribution of hospitals to health costs and the gap between the increase in available resources and the required resources in the health care sector, it sounds clear that the hospital as an economic enterprise should be exposed to financial analysis and identify the ways to improve its efficiency and productivity. Improving the efficiency of hospitals using existing resources can reduce costs and provide better and further services (12, 13).

Similar to other countries, the health care system in Iran has faced the challenge of raising costs. According to the report of the Central Bank of the Islamic Republic of Iran in 2013, the overall cost index has increased by 30 times over the past 20 years, and health care expenditure has risen by 71 times (14). Cost analysis in the hospital industry for proper financing and planning of upcoming courses is greatly important. Iran has been economically sanctioned, and these sanctions have an adverse impact on the health sector, which is directly pertinent to human lives. Considering the fact that the information obtained from the studies and surveys conducted on hospital costs was not comprehensive and complete (15-17), this research identified general strategies to reduce costs and improve the hospital's performance by conducting in-depth interviews with managers of both public and private hospitals affiliated with Iran University of Medical Sciences.

2. Objectives

This study was performed to identify the strategies to control and reduce costs using the viewpoint of the hospital managers in Tehran Province, Iran.

3. Methods

3.1. Study Design and Participants

This paper presents data from a qualitative study. It was done between April and September 2021 in Tehran Province, Iran. The research participants consist of hospital managers, as well as financial managers of both public and private hospitals under the supervision of Iran University of Medical Sciences. The participants were chosen purposefully in a non-homogeneous way. Inclusion criteria included managers or financial managers of specialized, general, educational, and non-educational hospitals who had at least 5 years of

experience and the willingness and ability to participate in the study. The sampling process continued as long as the data saturation was reached, and a total of 24 interviews were conducted.

3.2. Data Collection

Individual semi-structured interviews were used to collect the data. The interview guide form was designed from a comprehensive literature review in the field of hospital cost reduction strategies and was arranged in 2 sections, including demographic information and an informed consent form. The forms were available to each participant before beginning the interview. To thoroughly examine the views of participants, open-ended questions ranging from more general questions to specific ones were used. Three pilot interviews were conducted to optimize the questions and boost the validity of the research. After the announcement of the cooperation by each participant, an appointment was made by their choice. The approximate duration of each individual interview was 60 min, which could vary depending on the participants' responses and interests. The interviews were recorded with the participants' consent during the interview. The researchers reviewed the interviews several times soon after the end of each interview. The recorded content of the interviews was transcribed by one of the research partners. The written transcripts, along with the initially identified codes, were provided to some of the participants for review. The participants had the opportunity to make modifications, deletions, or additions to the written content as they deemed necessary. This process aimed to ensure accuracy and enhance the participants' confirmation of the researchers' understanding of the extracted codes.

3.3. Data Analysis

Data were analyzed using the conventional content analysis approach. This approach is a flexible method for analyzing qualitative data that has recently become popular in health studies. The advantage of this approach to content analysis is that it gathers information directly from the participants without imposing predetermined categories or theoretical perspectives (18, 19). The processes of data analysis and coding were as follows: familiarization with the text of the data, identification, extraction of main codes, identification of themes, review and completion of the identified themes, naming and definition of themes, recoding and renaming some classes and themes, and ensuring code reliability. NVivo 10 software was used to organize and analyze the data.

3.4. Trustworthiness

For the purpose of the trustworthiness of the data, Guba and Lincoln's criteria, including credibility, dependability, transferability, and confirmability, were used (20). To ensure credibility and confirmability, the researchers were involved in gathering or analyzing all data for a long time. Also, peer review and expert review were applied. The respondent validation was used after each session as the summary statements of the participant were told to him/her to affirm and prevent misunderstandings. For the Dependability aspect, the coding was done by 2 coders. For transferability, expert review, purposeful, and heterogeneous sampling were used.

4. Results

A total of 24 managers were selected. The majority of the participants were male ($n = 23$). The largest group aged between 40 and 49. Most of the managers came from government hospitals, and the highest degree fell in the master's degree category (Table 1).

After finding and analyzing the results of this study, cost reduction strategies were classified into 3 themes, 10 categories, and 42 subcategories. The 3 main themes of cost reduction strategies included human resources, management and organization, and equipment, facilities, and buildings (Table 2).

4.1. Theme 1: Strategies Related to the Human Resources

This theme included 4 categories and 15 subcategories. The categories included personnel incentive system, empowerment and training, systematic communication, and personnel management system.

The appropriate incentive and training system and systematic communication create a sense of belonging and loyalty in the organization's employees and can help improve the skills of employees in performing their duties and roles, which indirectly affects the reduction of hospital costs. P16 said: "In order for personnel to get involved in the process of cost reduction, a sense of belonging must be cultivated among them."

"Proper nurse and doctor communication with the patient play a significant role in cost reduction" (P17).

"One of the good things we did here was taking place the training classes and educating personnel on some solutions to decrease energy consumption" (P19).

The use of efficient human resources and a suitable management system for recruitment, promotion, and layoff can lead to an increase in the efficiency of the system

and control costs. Examples of interviewees' comments are given below:

"Our directors cannot use layoff thanks to consequences. Employees are mostly permanent, and if they want to perform layoff, they will legally get into trouble" (P15).

"Formerly, many of these man powers were not recruited via legal channels, and some of them are not qualified and impose costs on the system" (P12).

4.2. Theme 2: Strategies Related to the Management and Organization

This theme contained 4 categories and 18 subcategories. Hospital information, structural and organizational changes, using new methodologies, and energy management were the 4 main categories. The integration of hospital information systems, review and improvement of processes, and hospital committees were among the things that the participants pointed out to reduce hospital costs. In general, the perception of outsourcing varied from person to person, but most of the participants agreed with outsourcing. P14 stated: "The doctor seated in the reception can be provided with all of the patient's health care information on his computer to identify the best treatment."

"The committees address negative points, and they are reviewed by the executive team, which makes it possible to cover the gaps created there, and our costs will be reduced as a result" (P1).

Modification of the consumption pattern, in particular, in the field of energy and scientific methods of hospital administration, were other points that the participants expressed as important solutions for cost control.

"Defining the consumption pattern and determining instances of a waste of resources can inhibit fluctuations in consumption" (P14).

"By identifying processes, we were able to recognize, eliminate, and modify numerous defective processes, which further contributed to cost reduction" (P17).

"Management by Walking Around (MBWA) is the way I experienced, and I had a lot of achievements, which is a responsive method in the hospital system" (P21).

"We have to define the consumption pattern to reduce the cost of the hospital; there are other methods, such as Just in Time Storage Practices (JIT)" (P19).

4.3. Theme 3: Strategies Related to the Equipment, Facilities, and Buildings

Two categories and 9 subcategories were extracted from this theme. Improving the purchase and

Table 1. The Demographic Characteristics of Participants

Characteristics	No. (%)
Gender	
Male	23 (96.8)
Female	1 (4.2)
Age (y)	
30 - 39	4 (16.7)
40 - 49	13 (54.1)
50- 59	4 (16.7)
≥ 60	3 (12.5)
Roles	
Hospital managers	19 (79.2)
Financial managers	5 (20.8)
Ownership of the hospital	
Public hospitals	20 (83.3)
Private hospitals	4 (16.7)
Level of education	
Bachelor's degree	2 (8.3)
Master's degree	12 (50)
PhD	7 (29.2)
Physician	3 (12.5)
Total	24 (100)

maintenance system and scrapping system were the main categories of this theme. Participants identified preventive maintenance of medical equipment as one of the main factors in maintaining equipment and controlling related costs. Adopting a suitable purchasing strategy, purchasing from companies and institutions approved by the Ministry of Health, and using trusted suppliers were other points extracted from the interviewees.

"We have considered medical equipment maintenance as a principle and drafted its booklets" (P2).

"Usually, there are certain centers approved by the Ministry of Health. They are also introduced to us" (P24).

The erosion of buildings and the cost of construction amenities and infrastructures have doubled the need to detect defects in time before the occurrence of an accident and the imposition of exorbitant costs, and it has attracted the attention of some managers. In this regard, the interviewees pointed to solutions such as hospital auctions to replace worn-out equipment, early warning system repair, and reconstruction systems.

"I visit the site daily and keep advising my department superiors to constantly inspect and repair" (P19).

"If we establish a system that fixes, returns and/or controls equipment, therefore a lot of medical equipment will return back to the hospital" (P20).

5. Discussion

In this study, 3 main themes of cost reduction strategies included human resources, management and organization, equipment, amenities, and buildings. According to international standards, human resource costs account for about 55% to 60% of total hospital costs (21). Consistent with Gile and Kendrick's studies, the results of the present study also showed that hospital management could greatly cut down the cost of a health care center by reviewing the human resource structure and recognizing the waste costs of human resources (22, 23).

In the present study, incentive systems, personnel training and empowerment, recruitment, and layoff systems were identified as some of the human factors that contribute to cost reduction. Our results are consistent with the findings of most studies conducted in the field of encouraging and empowering personnel. Seidemann et

Table 2. Themes, Categories, and Subcategories of Cost Reduction Strategies

Themes	Category	Subcategory
1. Human resources	1.1. Personnel incentive system	The incentive to protect equipment, a sense of belonging to the organization, job security and promotion, access to personal goals
	1.2. Personnel empowerment and training	Training needs assessment; educational planning; holding training courses; effectiveness assessment of training courses; holding consultation meetings.
	1.3. Systematic communication	Proper interaction between physician and nurse; proper interaction between staff and patient; proper interaction between treatment staff and patients
	1.4. Personnel management system	Personnel recruitment system; personnel promotion system; personnel layoff system
2. Management and organization	2.1. Hospital information system	Information technology; integrated information systems; electronic health record
	2.2. Structural and organizational changes	The integrity of the management structure; processes review and correction; outsourcing; elimination of warehouse and warehousing costs; hospital committees; the tariff system
	2.3. Using new methodologies	Participatory management; scientific methodologies for hospital administration; strategic purchasing; using the management dashboard
	2.4. Energy management	Consumption pattern correction; automatic lighting system; electronic eye for water consumption; proper waste recycling; electrical protectors for valuable equipment
3. Equipment, facilities, and buildings	3.1. Improving the purchase and maintenance system	Purchasing Strategy; purchasing management; maintenance of equipment and facilities; equipment calibration; use of internal experts
	3.2. Improvement of scrapping system	Management of dilapidated buildings; continuous inspection to detect defects; early warning system; hospital auctions

al. showed that the system of incentives and motivation in the personnel can affect the effectiveness and efficiency of health care services (24). Inadequate salary could bring about discontent, absenteeism, complaints, or negligence. Gheibi et al. found that establishing a suitable reward system in Iranian hospitals can result in enhanced customer and employee satisfaction (25). A study conducted in Turkey was also consistent with our findings. They proved that the formation of hospital committees for staff training could define hospital problems and have a significant role in reducing the cost of conducting tests (26). However, in 2020, a study did not confirm the results of the current study. The results of the research showed that special attention should be paid to the factors that mediate the learning of the designed training and their application in the desired job. Neglecting these factors over time can lead to their oblivion, and accordingly, a small percentage of them can be transferred to the work environment, resulting in significant costs for hospitals (27).

The recruitment and layoff system is one of the main tasks of any organization. Other management tasks can be effectively put into practice when there are proper human resources to perform them. Bao et

al. used the data envelopment analysis method and found that increasing hospital staff improved hospital performance indicators. This effect was more pronounced with the recruitment of specialists, general practitioners, and nurses respectively (28). On the other hand, the recruitment and adjustment system, particularly with regard to treatment staff, should be carried out with high sensitivity, which was not mentioned by the interviewees in the present study. According to Chen et al.'s research, in the context of retrenchment, social support through resilience can increase the mental health of medical workers, especially middle-aged ones (29).

One of the main themes of this study was issues concerning the management and organization of hospitals, in which participants emphasized the hospital information system (HIS) and its impact on hospital financial issues. The results of Almasi et al.'s research mainly showed the positive effects of the HIS on the development of health services (30). Additionally, a study conducted in 2020 using the opinions of internal managers and information technology specialists of hospitals affiliated with Urmia University of Medical Sciences showed that the design and implementation of the health information management dashboard should

be reviewed and revised (31).

Outsourcing and modification of the consumption pattern are other results of the current research to reduce hospital costs. Management problems in the public sector have led to a reconsideration of how the health system is organized, with a focus on the role of the private sector. In the meantime, some individuals are seeking intermediate solutions to integrate the positive features of both (32). By outsourcing services and selecting the right personnel to meet the organization's demands, productivity can be increased while reducing costs (33). The implementation of joint programs between hospitals and the private sector, under the supervision of Iran University of Medical Sciences, can lead to cost management, as demonstrated by the results of this research. There were various results in this field, which are sometimes in conflict and sometimes in line with the present study. In 2023, a study conducted in Iran showed that joint action plans among medical science universities can strengthen performance and competition. However, without proper planning tools, universities may not be able to continue their interventions (34). On the other hand, in the United States, downsizing, declining human resources, and reengineering are vastly used, and this management strategy results in accessibility of services, quality of care, and cost reductions (35). Akkermans et al. presented that cost savings and customer satisfaction are the most influential factors in the decision-making process of outsourcing. Also, collaboration with the contractor leads to remarkable improvements in the quality of service (36). In a systematic literature review conducted between September and November 2021 to identify different concepts of privatization and outsourcing of health care in Iran, the results proved that this process occurred in Iran with a weak monitoring and evaluation mechanism. As a result, it has created an unfair and expensive health care system with low quality in Iran (37).

Structural changes and the use of new management techniques were other significant points in this study, which were mentioned by the participants as a way to reduce costs. Kaswan and Tucker, in their studies, used new management techniques. Kaswan et al. showed that JIT's concept can be applied in manufacturing companies and boosts effective inventory management and supply chain in service sectors such as health care (38). Besides, the MBWA approach promotes employees' commitment and working relationships, which are expected to be fulfilled with high confidence (39).

The preventive maintenance of medical equipment, facilities, and buildings is a way to control hospital income and expenses, which is the third main theme of this study. In terms of selection and purchase of equipment,

a systematic methodology should be provided, which is comprised of real needs assessment and equipment purchase management. Jamshidi et al. showed that the use of maintenance management systems for medical equipment saves money, reduces the number of repairs, and raises the maintenance standards in the hospital (40). According to Shohet's study, a maintenance collection consisting of 7 hybrid key performance indicators (KPI) can be used to analyze and maintain clinical facilities, thereby increasing their lifespan (41).

5.1. Strengths and Limitations

One of the most important strengths of the current study is collecting the views of managers working in public and private hospitals. Due to the different goals of the hospitals, the strategies used by these managers are different, and collecting them in an integrated format provides a comprehensive view to the experts and officials of the health systems. One of the practical limitations of this study was the difficulty in accessing managers due to their busy schedules. As a result, researchers conducted telephone and internet interviews in some cases to attract their participation in the study. The researchers hope to provide transferability and enable other researchers to conduct studies in this field by being transparent about the limitations of the study, methods of data collection and analysis, selection of participants, and a description of the subject.

5.2. Conclusions

There are several measures that can be mentioned to reduce hospital costs, such as the management of human resources and equipment, the use of centralized information systems as a management dashboard, modification of the consumption pattern, outsourcing, and the use of new management methods. With proper monitoring and management and paying attention to the goals of each hospital, these measures can be an effective step toward improving cost management, evaluating the efficiency of hospitals, and becoming the basis for informed decision-making. By adopting this approach, hospitals can avoid charging high fees to clients to cover expenses and confirm their presence in the hospital. Given that the present study is qualitative and we measured managers' perception of hospital costs, we suggest that future studies use evidence-based research to identify cost-saving measures that can be implemented in hospitals.

Acknowledgments

The authors wish to thank managers and experts of Iran University of Medical Sciences for their sincere cooperation and patience in interviews.

Footnotes

Authors' Contribution: Concept and design: Hesam Seyedin, Salimeh Goharinezhad, and Mohammad Azmal. Acquisition of data: Hesam Seyedin and Salimeh Goharinezhad. Analysis and interpretation of data: Salimeh Goharinezhad, Mohammad Azmal, and Rohollah Kalhor. Drafting of the manuscript: Mona Moghimi. Critical revision of the paper for important intellectual content: Hesam Seyedin, Mona Moghimi, Mohammad Azmal, and Rohollah Kalhor. Administrative, technical, or logistic support: Salimeh Goharinezhad and Rohollah Kalhor. Supervision: Hesam Seyedin.

Conflict of Interests: None of the authors had any conflict of interest.

Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Ethical Approval: Ethical considerations included: acquiring informed consent, having the right to withdraw from research, asking permission to record interviews, maintaining confidentiality, obtaining permission from the research vice-chancellor of Iran University of Medical Sciences University with project code (92-01-163-21313), and avoiding bias in data collection, analysis,

Funding/Support: This study was part of a research project entitled "The study of revenue and cost performance of private and public hospitals affiliated with Iran University of Medical Sciences." There was no funder in the study design, writing the manuscript, or submitting it for publication.

Informed Consent: Informed consent was obtained from all individual participants in the study.

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