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## Comparison of Total Cost of Health Services among Asthmatic and COPD Patients in Uni-Speciality Hospital with General Hospital

Mojgan Azadi <sup>1</sup>, Zohreh Etaati <sup>2</sup>, Shamsi Nasiri Raini <sup>2</sup>, Azar Nooraki <sup>2</sup>, Mohammad Reza Masjedi <sup>3</sup>

<sup>1</sup> Faculty Member of Paraclinical Research Unit, <sup>2</sup> Nursing Department, <sup>3</sup> Department of Pulmonary Medicine, NRITLD, Shaheed Beheshti University of Medical Sciences and Health Services, TEHRAN-IRAN.

### ABSTRACT

**Background:** Based on econometric studies conducted worldwide and in Iran, one of the methods by which the efficiency and effectiveness of an organization is evaluated, is by cost-control methods and economical analyses of therapeutic activities that must be carried out routinely and periodically. It seems that services offered in uni-speciality hospitals are cheaper than general hospitals. This study aims to propose a model by which the provided services can be expanded in a specific field of treatment. Also this study was conducted to analyse and compare the costs of asthma and COPD in two general and uni-speciality hospitals in order to determine the total services costs of these two diseases.

**Materials and Methods:** This cross-sectional retrospective experimental study calculated hospital costs and analysed the data in forms and tables designed especially for this purpose.

Also data in regard to capital, current and overhead costs were collected. After calculation, the mean of total costs in both diseases was assessed.

**Results:** In this study, econometric analyses of asthma and COPD demonstrated that the health services cost of asthma in a general hospital was 1.19 times greater than that of a uni-speciality hospital, while the services cost of COPD in a general hospital was 1.36 times that of uni-speciality hospital. The difference in costs includes duration of hospitalization, cost of paraclinical and diagnostic tests, counselling, medical equipments, and overhead costs.

**Conclusion:** As it is observed all over the world, health care personnel pay less attention to the costs of medical equipment and are less aware of the economical aspect of health care services,. Without considering the costs, physicians are always after new equipment. Having knowledge about the costs is not only essential for hospital administrators but also for all medical personnel, since with more cost reduction, a greater number of people can enjoy medical services. (Tanaffos 2006; 5(3): 45-49)

**Key words:** Economical evaluation, Uni-speciality hospital, General hospital, Total cost estimation, Overhead costs.

Correspondence to: Azadi M

Address: NRITLD, Shaheed Bahonar Ave, Darabad, TEHRAN 19569,

P.O:19575/154, IRAN

Email address:mojganazadi@yahoo.com

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## INTRODUCTION

From the initial stages of creation, mankind tried to take the advantage of available natural resources even in the presence of limitations in time, place and abilities. Therefore, in order to reach greater aims, he continuously tried to make changes in social and economical structures (1).

The hospital is one of the important establishments offering health services which plays an economically significant role. Considering the poor economical status of developing countries when facing changes in 'money and good' markets, this role becomes more significant (2).

The main aim of econometric studies of performance in the hospital costs is to take better advantage of the existing physical and technological facilities as well as manpower (3). Although the financial survey alone in the field of health and medical care seems useless considering the humanitarian and friendly nature of these services, but when used for evaluating the efficiency and proper usage of these resources it is beneficial (4). On the other hand, with cost-control procedures a greater number of people can equity use a higher level of health care. At the same time, control and supervising the financial activities of health centres is possible (5).

In most developed countries, more than 5% of the gross national income and 5-10% of the governmental costs are related to the health care sector. In this group, hospitals are considered as the largest unit of the medical sector having the highest costs.

Therefore, attention to health service costs is of utmost importance (6). Hospital costs have greatly increased in the past years and lowering these costs has become an aim. Although hospitals offer services to a limited number of people, a large part of the health care budget is allocated to them (7).

Jacobs states "about 50-80% of the total health cost is used by the hospitals; also a great number of highly educated personnel are working in this sector (6, 8). In this direction, some of the developed countries have tried to offer health services in special fields as "uni-speciality hospitals". In this way not only are more services offered to the patients but also the costs are diminished.

By studying asthma and COPD patients, we assessed the costs of medical services offered for these two diseases in both a uni-speciality and a general hospital aiming to propose a practical approach for health services costs (based on common scientific theories in two equal level governmental hospitals).

Therefore, by performing more comprehensive analyses, the health services costs can be controlled. Based on studies conducted on cost patterns it was observed that in some countries with economizing strategies, the costs can be reduced by 50% or more (9).

In one of the children hospitals in Myanmar, a group of researchers conducted a one-year prospective study on health costs of thalassaemic patients that had referred to the "Day Care Room" (DCR) as out-patients. The aim of the group was to detect the efficiency cost and effectiveness of each group. This study estimated two major groups of costs:

- 1) Costs bore by the hospital, and
- 2) Costs bore by the patients' families.

Results showed that out of total payable costs in DCR, 74-75% of the costs were related to consumable items. The costs of the physicians' visits during blood transfusions and other expenses during a year ranged from 166.5-173.3 Kyat (the official currency of Myanmar) and 1108.6-1208.6 Kyat respectively.

The average of health costs per visit and also the

average costs paid by the patients were 21(0-302) Kyat and 107(0-1500) Kyat respectively (10).

## **MATERIALS AND METHODS**

This study was an applied retrospective cross-sectional study conducted in the second half of 2004. The understudy group consisted of patients diagnosed with asthma and COPD that had referred to Masih Daneshvari uni-speciality hospital (National Research Institute of Tuberculosis and Lung Diseases) and a governmental hospital namely the Shohada General Hospital. In this study, the total health services cost was estimated based on statistical techniques. Also, by designing special forms and tables, essential data in regard to costs of consumable materials, medication, fixed assets (office equipment, specialized equipment, and building), manpower, and overhead costs were recorded. After calculation, the total health services costs of asthmatic and COPD patients were compared. The number of admitted patients in Masih Daneshvari Hospital and Shohada General Hospital during the second half of 2004 was 85 and 60 cases respectively. Also the average total cost of patients was calculated.

Considering the specificity of the research, the items are considered under two headings.

## **DEFINITIONS**

### **General consumable materials and equipments**

Includes all items given to the wards on a monthly basis upon request.

### **Specific materials and equipments:**

Include all personalized items provided for each patient by the pharmacy according to the prescription.

### **Fixed Assets**

Fixed assets include all capital that are permanent or have a long-life and are used routinely in the

institute. These consist of land, building, machinery, furniture, automobiles etc. (4). Amortization is defined as the gradual discounted value of the fix assets by oldness, wearing, etc. The accountancy of depreciation is specifically defined as the division of total depreciation of a fixed asset between the years of its beneficial life time (11).

### **Manpower costs**

All personnel costs including official working hours, extra working hours, etc. Also, all monetary and non-monetary costs paid to all personnel are included in this title.

### **Overhead costs**

These include costs that are not directly involved in medical services; but rather, they are indirectly effective. These include gardening and guarding costs.

### **Total costs**

The total cost is calculated in 4 stages: detection of factors making up the total cost, recording of cases, analyses and finally reporting in the forms of tables and specific forms.

### **Instruments**

The essential instruments for data collection in each section include:

- The data necessary for manpower cost- estimation is collected by reviewing personnel files, salary, extra working hours, rewards, etc.
- Data collection for general and specific equipments, materials and fix assets made by reviewing prescriptions, money orders, etc.
- Data collection for overhead costs (water, power, fuel, telephone, etc.) made by reviewing accounting book and financial statements analysis.
- Data collection for depreciation costs through listing of equipment and tools present and pricing done by experienced personnel of the hospitals.

- Patients' data collected by reviewing medical records.

Therefore, data essential for calculating the total cost for any disease is collected by considering costs of general and specific equipments and material, manpower, depreciation, and overhead costs.

## RESEARCH VARIABLES

Research variables include:

- Independent variables which include type of hospital and disease.
- Dependent variables which include estimation of the total costs of a disease.
- Interventional variables including type of insurance of patients, underlying disease, methods of calculating total costs of patients, and the hospital type (governmental).
- Underlying variables: Tariff approved by the Ministry of Health and Medical Education, and the filing system of the hospital.

## RESULTS

In this research we have estimated the mean total services costs of COPD and asthmatic patients in two hospitals after considering the total number of admissions and the available wards. It is clear that in this estimation, the number of beds available, the percentage of beds occupied, and hospital stay were included. The important point in these findings is the attention given to overhead costs when calculating the total services costs.

The mean total services cost of asthmatic patients in the uni-speciality hospital was 736.714 Rials, compared to 872.552 Rials in Shohada General Hospital (1.18 times more). Meanwhile, the mean total services cost of COPD in the uni-speciality and Shohada General Hospital was 896.914 and 1,176,500 Rials respectively (1.36 times more).

Manpower constituted main part of the costs in the two mentioned hospitals. Various costs of asthma and COPD in the two hospitals (uni-speciality and general) are shown in table 1.

**Table 1.** Comparison of total health services costs of asthma and COPD in uni-speciality and general hospitals in the second half of 2004

COSTS	COPD		Asthma	
	Unispeciality hospital	General hospital	Unispeciality hospital	General hospital
Generally consumable materials and equipments (Rial)	24.862	46.118	23.855	39.555
Specifically consumable materials and equipments (Rial)	68.683	98.237	46.829	64.951
Fixed assets (Rial)	57.952	90.002	39.782	57.812
Manpower costs (Rial)	652.855	827.314	560.188	611.240
Overhead costs (Rial)	62.562	156.709	66.060	98.994
Total costs (Rial)	896.914	1.176.500	736.714	872.552

## DISCUSSION

Based on the results of this study, the total services cost of COPD in Shohada General Hospital was more than Masih Daneshvari Hospital (uni-speciality hospital). This difference in the case of asthma was less than COPD.

As observed, manpower made up the greatest part of the costs; being on average 74.66% in uni-speciality hospital and 70% in general hospital. Mean overhead costs in uni-speciality and general hospitals were 9.68% and 12.35% respectively. Increase in the number of units offering services in general hospitals increases the total health services costs of patients. Also fixed asset costs in uni-speciality and general hospitals were 5.95 and 7.15 respectively. Increase in the number of units offering services results in increased depreciation of equipment.

The important point in this study was the fact that

both hospitals were teaching hospitals; a point which increased the services costs of patients. Mean days of admission in case of asthmatic patients in a uni-speciality hospital and a general hospital was 2.5 and 3.7 days respectively. In the case of COPD the rates in uni-speciality and general hospitals was 3.2 and 4.3 days respectively. The most important factor in increasing the days of hospitalization was delay in counselling and performing diagnostic tests.

By indirectly affecting the overhead costs, use of various equipment increases the total services costs in general hospitals.

As it is clear, by offering uni-speciality services there is a decrease in admission costs, increase in quality of services offered, more rapid and accurate diagnosis and better usage of facilities, improve in quality of services and necessary follow up of the patient after diagnosis; a fact which is agreed on by most countries. Today by providing these services in uni-speciality centers, steps have been taken in this regard.

## REFERENCES

1. Peyman SM. "Interactions and Beneficial", Journal related to Kosar financial organization. Spring of 1995.
2. Khamseh Sh, Hassan A. Financial evaluation of Imaging department of Iran oil company general hospital along with analyzing the total costs comparing with the approved tariffs (governmental and private sectors) in 1996. Thesis for Master's degree in health and medical equipment management. Islamic Azad University. Tehran 1997-1998.
3. Russell L Ackoff. Cooperative programming: management coordinated with development 2001.
4. Asefzadeh S. Health economy. Danesh-e-Emrooz publications, Tehran, 1992.
5. IranNejad Parizi M, Sasan Gohar P. Organization and management: from theory to action. Second edition, Iran banking institute Tehran, 1992.
6. Jacobs Ph. The economics of Health and Medical Care, Aspen Publishers, Third Edition, Gaithersburg, Maryland, 1991.
7. World health organization 1987 reports. 1987 pages 56-60.
8. Azizi F. Health, treatment and medical training status. Health Ministry Publications. Tehran 1996.
9. World health organization. Dictionary of health expressions for everyone till the year 2000, translated by Pilehroody S et al. The Ministry of Health publications, Tehran, 1986.
10. Aghvami D, Babakhani J. Principles of accounting in both governmental and nongovernmental organizations, Samat publications. Third edition. Tehran 1994.
11. Nabavi A. Principles of accounting. Second volume. Farvardin publications, Tehran, 1994.