Preliminary Investigation of Economics Issues in Hospitalized Patients with Stroke

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Brief Communication

ABSTRACT

Background: The study of economics is important in Iranian stroke patients, because it is one of the costly diseases that could be linked to disability, mortality, and morbidity. The aim of this preliminary study was to investigate total treatment costs of hospitalized patients with stroke.

Methods: A cross-sectional study of 24 patients conducted to Isfahan Neurosciences Research Centre was carried out between April 1, 2012 and September 31, 2012. Demographic (sex, age) and economic variables (Raise tariffs, accumulated surplus, the total amount, of patients', patients' paid, and home insurance contribution) were extracted from the patients' profiles. All information recorded and processed using Excel.

Results: The mean age of patients was 71 years (ranged; 40-93 years old). Preliminary analysis of available costs issues could be described as: Raise tariffs (mean: 3500256 Rial, ranged: 504460-9775455 Rial), accumulated surplus (mean: 565578 Rial, ranged: 56700-2343664 Rial), the total amount (mean: 4045556 Rial, ranged: 715460-12219119 Rial), of patients' (mean: 756037 Rial, ranged: 0-8365447 Rial), patients' paid (mean: 1307762 Rial, ranged: 45300-9193000 Rial), and home insurance contribution (mean: 3070713 Rial, ranged 0-8887907 Rial).

Conclusions: The cost disparity within this study after stroke could be mainly connected to variations in duration of hospital stay. Inspecting agenda towards this direction could reduce the economic cost of stroke significantly. Therefore, further assessment correlated to attain strategies in order to reduce costs associated to patients' paid and home insurance contribution could be much more advantageous.

Keywords: Economics, hospitalized patients, raise tariffs, stroke

INTRODUCTION

Study of finance is an important topic, especially in the new world of prevention, diagnosis, and management of disease in common and within neurological disorder in particular. Therefore, the importance of economic revision in patients with stroke could be an important subject. The costs for patients with stroke connected to prevention, treatment, and management inferences that could be increased significantly from one patient

to another due to disparity in clinical features. The management of stroke symptoms plus services of healthcare desires monetary policy. Restrictions on healthcare funds, command that finance distribution judgments could be conducted by consideration of charge in relative to fees. As a result, it accompanies to an augmented demand for profitable estimation and therapeutic equipment consideration.[1-5] There is also an imperative enhance in the fees of healthcare supply, largely owing to the growth of therapeutic knowledge and the community's attitude and occasion. Currently, there is an increase in the demand for the extensive assortment of medical equipment that is also expressed as "medical devices". Therefore, therapeutic apparatus emerge to be linked to an augment within stroke cost subsequently.[6,7] Previous publications reported that patients acquire extensive expenses when attending anticoagulation clinics and this expenditure differ from one country to another.[8] In another publication, the economic aspects of therapy and support service for people with stroke and aphasia was reported by van der Gaag *et al*. in 2008. They confirmed that management related to techniques of rescue can be assisted by the definite inspection of the expenses and outcome of different programs.[9] Recognition of patient heterogeneity based on population refund decisions could potentially save money and enhance health.[10] Inadequate accessible funds in providing health care have been compensated numerous consideration in modern times. Total medical costs for a hospitalized patient with stroke are investments, which afford patients with health services such as, doctors' visit, medicines, duration of hospital stay, and etc., Furthermore, a decline in profits due to disability conduct to serious injuries and high costs to the union. As the therapeutic funds are restricted, defined arrangement appears to be desired for the use of these means. To determine different economic sources which attribute in total stroke treatment costs, the aim of this preliminary survey were to have a general look to economic issues at the Isfahan Kashani Hospital.

METHODS

A preliminary cross-sectional study of 24 patients (comprised: 10 females and 14 males) located at the neurology ward conducted to the Isfahan Neurosciences Research Centre was carried out between April 1, 2012 and September 31, 2012. The information related to the clinical, pharmacological and costs were extracted from the patients' profiles. Ayatolah Kashani is a public and teaching hospital and its fees are derived from executive community tariffs. The community tariffs are considerably lower than private tariffs and real costs. Alternatively, the government is paying concealed subventions to public and teaching hospitals. This could recommend that the charge of disease management in Ayatolah Kashani have been lower than definite cost considerably. The cost of economic issues expressed as Iranian Rial and 25000 Iranian Rial is equal to 1 American Dollar. Total costs and expenses of the patients were including; hospitalization, doctors' visits, medical tests, drugs, laboratory tests, and etc., were noted. A monetary calculation report was intended by the hospital regional financial section. The total calculation for each individual patient was noted in record as: Raise tariffs, accumulated surplus, total amount, of patients', patients' paid, and home insurance contribution (Social Security Insurance and Medical Services Insurance). The recorded data included: Precisely calculated costs'; demographic (age, sex) and medical condition were recorded in Excel and analyzed by SPSS for windows. To analyze the data, Kruskal-Wallis test was used.

RESULTS

However, the mean age for all patients (*n* = 24) was 71 years (ranged: 40-93 years) but the male population seems older than the females. The mean age in males (*n* = 14) was 76.6 years (ranged; 52-93 years) and the mean age in females (*n* = 10) was 67.2 years (ranged: 40-88 years) respectively. The mean hospital stay was 4 days (ranged: 2-8 days). Table 1 shows the preliminary analysis of available costs issues.

With a mean of 3500256 and 565578 Rials, raise tarrifs and accumulated surplus ranged from (504460-9775455) versus (56700-2343664) Rials correspondingly. Figure 1 shows the total amount that is a sum of raise tarrifs and accumulated surplus. In the 12 out of 24 patients (50%) with a mean age of 64.6 years (ranged; 40-93 years) total amount was more than 3000000 Rial. The mean value related to total amount in this group was 6186164

Table 1: Preliminary analysis related to available costs issues in stroke (*n*=24)

Variable	Mean (Rial)	Min-Max (Rial)
Raise tariffs	3500256	504460-9775455
Accumulated surplus	56700	56700-2343664
Total amount	4045556	715460-12219119
Of patients'	756037	0-8365447
Patients' paid	1307762	45300-9193000
Home insurance contribution	3070713	0-8887907

Rial (ranged; 3112295-12219119 Rial). The mean total amount in males (*n* = 4) and females (*n* = 8) were 5224694 (ranged; 3112295-7457285 Rial) and 6666899.8 (ranged; 3688065-12219119 Rial) respectively. The mean hospital stay for both genders was approximately 4 days (ranged; 2-8 days for male and 2-6 days for females). The mean values for patients' paid and home insurance contribution were 1307762 versus 3070713 Rial (ranged; 45300-9193000 vs. 0-8887907 Rial) respectively. A further analysis related to patients' paid showed that in two males (a 55 and 40 years old, with 8 and 4 days hospital stay) the amount of expense were 3331000 and 9193000 Rial. In the 17 out of 24 patients (approximately 70%), patients' paid was less than 1000000 Rial [Figure 2]. Home insurance contribution with a mean of 3070713 Rial ranged from 0 Rial to 8887907 Rial. The minimum value of 0 Rial is related to an 80-year-old lady that had not Home insurance number; therefore, she paid a total amount of 2827000 Rial [Figure 3]. In the 13 out of 22 the contribution of home insurance was between 350000 Rial and 990000 Rial and in the 7 cases was between 3110000 Rial and 7000000 Rial and in 2 cases was between 7200000 Rial and 8880000 Rial (a 53 and 55 years old with more than 5 days hospital stay).

DISCUSSION

Current and prospect reports of stroke are thoroughly correlated to the demographic growth, taking place in all over of the world. The findings of this study showed that, in Iranian stroke population, cost disparity might be connected to variations in duration of hospital stay. The mean value related to patients' paid and home insurance contributions could confirm the source of economic heterogeneity. Therefore differences
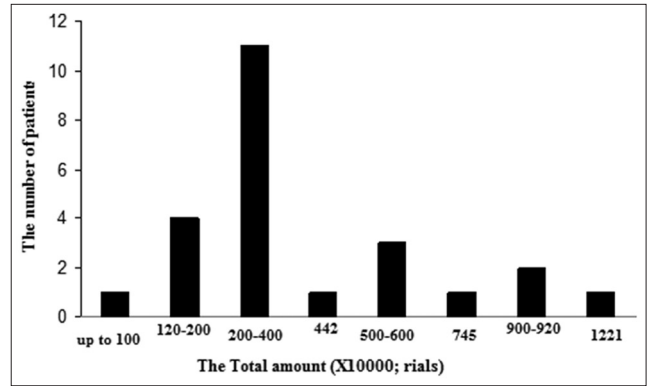

Figure 1: Distribution of total amount (Raise tarrif + accumulated surplus; *n* = 24)
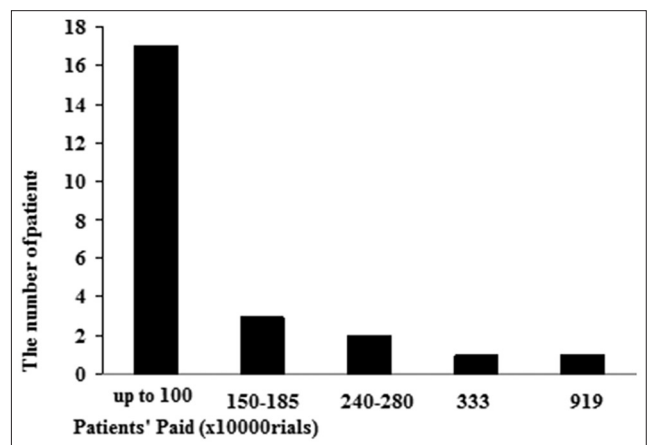

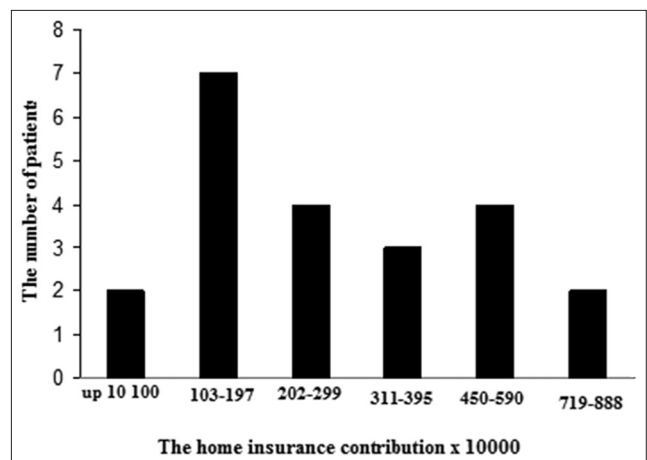**Figure 2:** Distribution patients' paid (*n* = 24)

Figure 3: Distribution of home insurance paid (*n* = 23)

in patients' paid might be due to the complication of care services needed for each patient. This is in agreement with reported previous publications that sources of patients' heterogeneity and pharmaceutical should be considered as economic

source in stroke.[2,11-35] Previous publication reported that patient heterogeneity is the division of inconsistency that can be elucidated by convinced patient personality such as age and illness phase. The importance of duration of patient's hospital stay,[19] drugs,[15] staff, medical technology,[7] governmental, and financial income in monetary assessments in patients with stroke have been confirmed in previous published reports. The complexity related to inter- and intra-individual variation between patients care services' requires the accretion of information from multiple sources. As a result further attention related to patient heterogeneity in future financial assessments could progress the effectiveness of healthcare. Frequency of adverse drug reactions in hospitalized patients has been reported in around 2% of total population studied. They recommended that a considerable cutback can be made if sufficient concern is applied.[25] Atrial fibrillation could be another prognostic of higher expenses for stroke care.[27] Since healthcare incomes are not unrestrained, it is evident that excessive expenditure of them by convinced patients confines the use of the same funds by others. Finally, a clear analyses and detailed account of confirmation are essential to the use of financial verification in settlement judgments related to stroke costs.

CONCLUSIONS

Economic items have been creased out in this preliminary study related to stroke in Iranian population; however, it is helpful to provide information about methodological individualism as an important factor for hospitalized patients. To distinguish toward the active gears of interference and investigate the different economical judgment, correlation between costs and duration of stay and drugs might be beneficial. These are limitations of our study; however, we are planning future studies on these important issues.

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