

A BRIEF ANALYSIS OF REGIONAL DISPARITIES IN THE USE OF HOSPITAL SERVICES FOR ACUTE CASES IN ROMANIA

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INTRODUCTION

Given the worldwide concerns for reducing health care costs and increase efficiency in healthcare, the relevant international bodies have stressed once more the need to maintain the equity of health care and of the patient access to them, as priority for professionals, policy makers and general public.

Since 2000, the World Health Organization, by "The World Health Report", supported policies to ensure equity in health. European Commission in 2009 issued a resolution calling on Member States to reduce inequalities in health through interventions on social determinants.

Patients access to health care is often limited by lack of financial resources, lack of medical technology and human resources. Hospitals in Romania are consuming an estimated two thirds of the total health budget, having the highest rates of hospital admission in the EU. Thus, if the proportion of GDP allocated to health in 2006 represented about half of the one allocated within the EU, in Romania the rate of hospital discharges per 100 inhabitants greatly exceeded the one in the European countries (25 to 18) [1]. In addition to underfunding, has often been quoted the arbitrary use of resources, their inefficient and inequitable allocation, unsupported by cost-effectiveness studies; it was also stated that the allocation process is not transparent, not constant and not based on solid criteria [2].

NorthEast regions, SouthWest and southern Romania are characterized by a high rate of poverty, high coefficients of variation comparing to the rest of the developing regions for GDP per capita, schooling rate, infant mortality rate, all showing the presence of inequalities in terms of health. (Dragomirișteanu A, 2010) [3].

It is necessary to differentiate between social inequalities in health and social inequities in health, considered unfair inequalities by the experts in bioethics [4].

As previous studies have shown (Chiriac, 2010), in Romania there are real variations in medical practice for hospital services. Thus, the study of the volume of hospital care, depending on the patient's home county, shows an excess of services in the South-West and West counties of the country, (Timișoara, Arad), but a clear deficit in the NorthEast areas [5].

Summary:

Purpose: to study the geographical disparities in the consumption of hospital services and their potential causes

Methodology:

The study presented in the article is a descriptive observation one, conducted for the year 2008. The analysis included all the cases discharged from continuous acute care hospitals in Romania, considered valid.

There were studied the following hypotheses:

- 1. the excess in consumption of hospital services (measured by the standardized ratio of the cases and of the hospitalization days, according to the age group) is associated with a lower standard of living and a greater number of beds*
- 2. the excess consumption of hospital services generates a reduction of the mortality in the general population in that geographic areas (measured by the standardized mortality report by age group).*

The association between these variables was tested for the 8 development regions (the Spearman correlation test) respectively for the patient's home county (the Pearson correlation test), using the statistical analysis software SPSS.

Results:

Although differences in the consumption of among the different development regions, respectively among the counties, are obvious, no association between the high volume of hospital services and mortality was found; therefore, it can be assumed that excessive consumption of services is not accompanied by an improving of the health status of patients as mortality reduction. The income influences poorly the volume and the outcome of the healthcare, but correlates with the number of hospital beds in counties with a higher income level. There is no correlation between the number of hospital beds and the volume of the consumed services. Although, at county level, the correlation between the number of cases and the hospitalization days are proven, there are development regions that surprises by the overall scarcity of cases, but excess hospital days.

Conclusions

There are variations in hospital care practice, which should be measured and analyzed in terms of causes, and should be prevented through monitoring the service needs, data reporting and the careful assessment of the structures and the resources.

AIM: the study of the geographical disparities in the consumption of hospital services and their potential causes.

METHODOLOGY:

The volume of hospital activity was measured using the following variables: the number of cases discharged and the number of days of hospitalization.

We analyzed the extent to which the excess or deficit of cases or the hospitalization days is influenced by a number of structural or income factors and also the impact of the excess in the healthcare on the population health status.

The study presented in the article is a transversal, descriptive one, conducted for the year 2008. Some data about income or structure were published in late 2007, but were taken as such, since they were not likely to vary significantly in 2008. The analysis included all cases discharged from acute hospitals in Romania (continuous care), regardless of the type of funding (DRG or non-DRG¹), considered valid in terms of accuracy of reported data and codification, who qualified to be reimbursed from the FNUASS².

¹DRG= diagnosis related groups

²FNUASS = Romanian Unique National Fund of Health Insurance

Data sources were: the DRGNational data basis, managed by the National School of Public Health, Management and Continuous Medical Education in Health, Bucharest; for data on population, The National Statistics Institute and for the income data The National Commission for Prognosis. Data about the number of beds were taken from The National Center for Organization and Assurance of the Information and Computerized System in Health.

The studied variables were: the number of hospital services and the number of inpatient hospital days, respectively the standardized report of discharges and the standardized report of hospitalization days, according to the age groups. The analysis searched any excess or deficit of cases, or hospitalization days, compared to a "standard", that might occurred. We considered as standard the national level of the studied indicators (rate of discharges, number of hospitalization days, etc.)

There were studied the following hypotheses:

1. the excess in consumption of hospital services (measured by the standardized ratio of the cases and of the hospitalization days, according to the age group) is associated with a lower standard of living and a greater number of beds;
 2. the excess consumption of hospital services generates a reduction of the mortality in the general population in that geographic areas (measured by the standardized mortality report by age group). For standardization it was used the indirect method. The standardized rates were calculated for the studied indicators, and then the standardized report of the indicators and their confidence interval (CI +95%);
- The excess or deficit in a county was assessed by the percentage that exceeded or was below 100% for the standardized report of the evaluated indicator.

Data were processed and analyzed for the 8 development regions (depending on the patient's home county) and the intensity of the association between variables was tested using the Spearman test for the correlation of ranks. Statistical analysis was performed in SPSS. The testing of the association at county level was performed using Pearson correlation test.

RESULTS

For 2008, the situation of volume indicators in the various development regions was very different, depending on the region. Thus, NorthEast region has a special situation, since it is obvious a clear deficiency of cases and of hospitalization days comparing to the national standard – figure 1. The East and SouthWest regions appear deficient in number of cases but having an excess in hospital days, while the SouthEast region has the highest excess of cases in all regions, but almost the most important deficit of hospitalization days. Western Region, with moderate excess of cases and hospital days, has the highest mortality (measured as a standardized report). In descending order of

Figure 1. The excess or deficit of cases or hospitalization days, on development regions, Romania, 2008

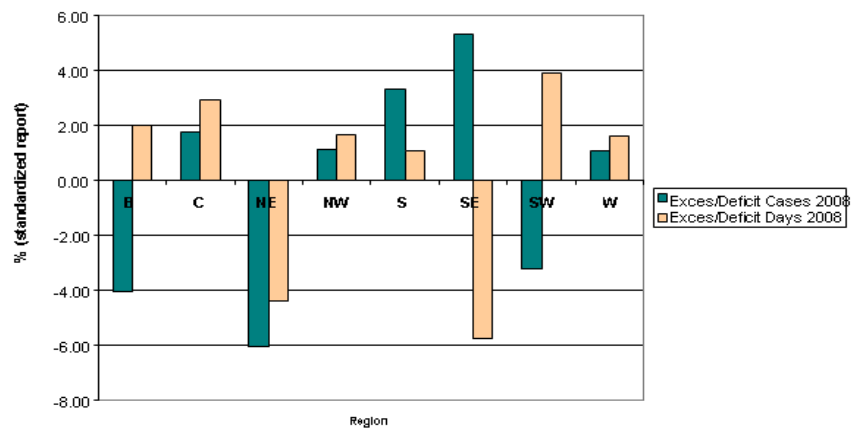
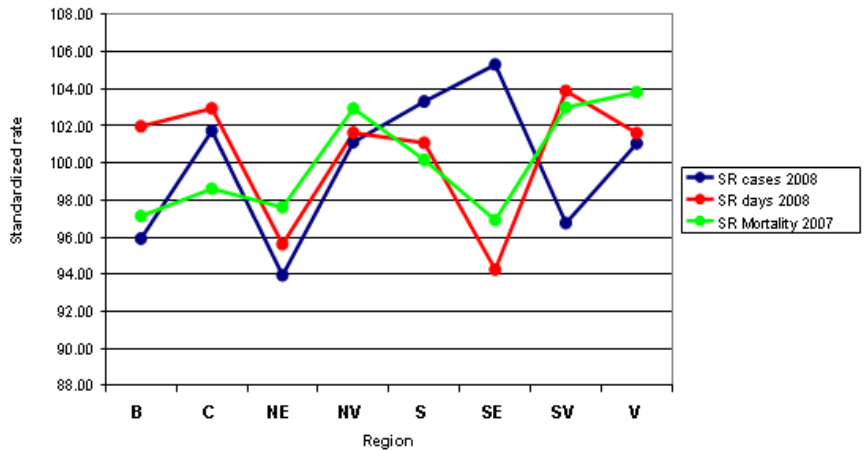


Figure 2. Comparison of standardized rates of the number of cases, hospitalization days and in mortality, on development regions, Romania, 2008



the standardized mortality follows the Northwest region and the SouthWest region -Figure 2.

To test the first hypothesis, it was verified a correlation between the number of beds and the excess of hospital services, using the Spearman test, which showed a low (correlation coefficient <0.2), indirect (negative coefficient) and insignificant (p-value = 0.675) correlation. In other words, the excess of cases is not influenced (almost at all) by the number of beds. Details on the volume indicators and the number of beds are provided in Table 1.

Although we found a weak positive correlation between income and the number of hospitalization days and between income and the number of cases, it is statistically insignificant (p> 0.05). Insignificant is also the reverse correlation between GDP and the standardized mortality rate, so, although it seems that a higher GDP is associated with lower hospital mortality, this cannot be said with certainty.

The Spearman test was used also to test the hypothesis that a higher consumption of hospital services decreases mortality. The results showed a low (correlation coefficient <0.2), indirect (negative coefficient) and insignificant (p-value = 0.438) correlation. In other words, the mortality is hardly influenced by the excess of cases.

Table nr 1. Summary of volume indicators, financial and resources indicators regard. Also, a greater use of hospital care does not seem to have a clear impact on hospital mortality.

Development region	Standardized report *	Standardized report days*	beds/1000 inhabitants **	GDP (euro/inhabitant **)	Gross income / month (euro/pers//month)*	Mortality Standardized Report ** (MSR)
B	95.92	101.98	8.13	12895.84	251.82	97.14
C	101.75	102.94	6.89	5866.87	173.27	98.62
NE	93.95	95.62	5.44	3697.87	148.79	97.62
NW	101.12	101.63	6.75	5576.51	175.60	102.95
S	103.32	101.09	4.59	4721.72	164.65	100.18
SE	105.31	94.26	4.93	4686.96	155.46	96.92
SW	96.75	103.89	5.49	4523.81	156.50	103.00
W	101.07	101.61	6.99	6694.60	251.82	103.82

* data for 2008 ** data published in late 2007

Table 2. The volume, structure, and economic indicators situation, (expressed by the values average and the standard deviation)

Indicators	Average +- Standard Deviation
Gross rate of discharges / 1000 inhabitants *	231.03+ 27.64
Gross rate of hospitalization days / 1000 inhabitants *	1583.77+ 188.54
Average monthly per capita earnings (euro) *	225.54+ 27.32
GDP/inhabitant (euro) **	5124.60+ 39.73
beds/1000 inhabitant **	5.69+ 1.46

* data for 2008 ** data published in late 2007

In a second phase of the study, we tested the associations assumed in the hypothesis at district level, in order to refine the analysis and to increase the power of the statistical tests.

As a first remark, comparing gross rates of hospital discharges and of the hospital days per 1,000, but also the average monthly per capita earnings, was found a medium variation between the counties (coefficient of variation of approximately 11-12%). However, for the GDP indicator, the variation is high (39%), as well as for the number of beds per 1000 inhabitants (25% coefficient of variation between counties).

Testing the statistical associations between the indicators studied above (using Pearson correlation coefficient), it was noticed that there is a direct, positive, statistically significant correlation between excess days of hospitalization and excess of cases, by county of residence of the patient (correlation coefficient = 0,843; $p < 0,01$). Also, average earnings are positively associated with the number of beds (correlation coefficient = 0,636; $p < 0,01$). Between the GDP/inhabitant and the number of beds per 1,000 inhabitants there is a direct positive correlation, statistically significant (correlation coefficient = 0,484; $p < 0,01$).

Although mortality appears to be negatively affected by increased economic indicators and a greater number of beds per 1,000 inhabitants, no statistically significant correlations were identified in this

CONCLUSIONS
Although differences in the consumption of hospital services between developing regions and counties are obvious, it was not found any association between the high volume of hospital services and the mortality; therefore, excessive consumption is not accompanied by improving of the patients health status in terms of mortality reduction.

The standard of living poorly affects the volume and the outcome of care, but correlates with the number of hospital beds in counties with a higher income level.

There was no correlation between the number of hospital beds and the volume of services consumed.

Although the county level there are clear correlations between the number of cases and the hospitalization days, there are having fewer cases but with an excess of hospital days, what raises further questions on whether is appropriate to maintain the cases in the hospital for a long period of time. On the opposite side, there are regions with an excess of cases, but less hospital days, as the SouthEast region, where it can be assumed that there is an increased turn-over of hospitalized patients, probably for less serious illnesses, which require a short hospital stay. But here, the situation can be interpreted in terms of lack of specialties or facilities to assist serious, complicated cases.

A firm conclusion can not be drawn in the absence of data on the complexity of the treated pathology. In countries with tradition of using case mix data basis in supporting the health policy decisions, statistical data are adjusted depending on the complexity of cases. In Romania, where monitoring of the reporting of case complexity is just incipient and coding consulting firms generate and maintain a constant upcoding phenomenon in hospitals, however, an adjustment of the data according to case mix would be premature and irrelevant.

Details resulted from this study show the real existence of variations in hospital care practice, that must be measured and analyzed in terms of causes and prevented through monitoring of the service needs, the reporting of data and by careful assessment of structures and resources.

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