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THE EVOLUTION OF HOSPITAL ACTIVITY, VARIATIONS IN SURGICAL PRACTICE, OVERALL AND ADDRESSED TO VULNERABLE PATIENTS

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The whole modern health management aims to shift the healthcare from hospitals to outpatient care. During last decades, EU reduced the number of hospital beds, the length of stay, trying to improve the efficiency of the health system. Is this possible to be done, preserving in the same time the equal coverage with health services, limiting the practice variations? The present study presents the evolution of the main indicators for the volume of hospital and surgical activity; some of differences recorded among regions or patient groups, and identifies features of the surgical practice concerning some vulnerable age groups of patients: children and elderly. The conclusions point out that the hospital activity increased, but varied among districts and age groups. There are some surgical interventions that occur very often in children or consume many hospital days in elderly, that might need special analysis in order to evaluate their appropriateness or efficiency.

Key words: hospitals, variations, children, elderly, surgical interventions, case mix

The whole modern health management copes lately with the continuous raise of costs in health services, with the inefficiency and inequity of resource allocation, with the high consumption of medical services, sometimes unjustified [1].

The international efforts to induce and sustain a certain shift in the medical practice who will lead eventually to redirect the inpatients towards the outpatient care, meaning the simultaneous development of primary or ambulatory care, day surgery, home care or recovery centers, palliative care, are already well known [2]. The reduction of hospital services alone as an isolated phenomenon is difficult to implement but also to sustain.

What are the tendencies in Romania within this international context, as long as the development of the primary care and the redesign of hospital services were declared priorities for the healthcare reform? [3]. For a complex evaluation of the facts, would be necessary integrate date about the structure, process and outcome from the primary care to the hospital care. In our country this cannot yet be performed, but the collection of patient level clinical data starting since 2003 in Romania (with the implementation of DRG system at national level) made possible the development of a database, already known as DRGNational. Along with its use in administrative purposes, it can be analyzed in such ways that some critical tendencies or aspects be highlighted [4].

The present study aims to illustrate the evolution of the main volume indicators for hospital activity between 2004-2008, and for the main types of surgical procedures, especially from the perspective of vulnerable patients groups, like children and elderly.

METHODOLOGY

This is a retrospective observational descriptive study including cases discharged from the acute care hospitals in Romania, during 2004-2008. All cases accurate reported and coded, qualified for reimbursement by the National Unique Health Insurance Fund were included in the study. Studied variable were related to socio demographic features of the patients, the volume of hospital services, number of hospital days, the surgical activity rate. We studied: the gross rate of discharges, of principal surgical procedure, the structure of discharges and features of average length of stay according to the sex, residency, age group, district of the patient. We investigated potential associations between the standard of living and the evolution of gross rate of discharges and studied the differences between the types of surgical procedures performed on children or elderly.

The indicators were analyzed according to four age groups, respectively 0-4 years, 5-14 years, 50-59 and 60 and over. For the analysis of surgical interventions were studied patients 1 to 4 years old, quoted as "children", and patients 60 and over years old, quoted as "elderly". We selected these age groups, because previous studies have shown that patients within these groups have similar features regarding the hospitalization, requiring a high volume and high quality of care.

RESULTS

During 01.01.2004-31.12.2008, the absolute number of discharges increased with 12%, from 4391426 to 4933038. Possible explanations could be the increase in the number of hospital reporting data on regular basis in DRGNational database (from 371 to 485), the DRG of system expand in Romania (Table 1).The structure of cases, according to sex and residency, shows a slight predominant of females and urban patients. In 2007-2008 the proportion of patients living in urban areas tended to increase comparing to previous years.

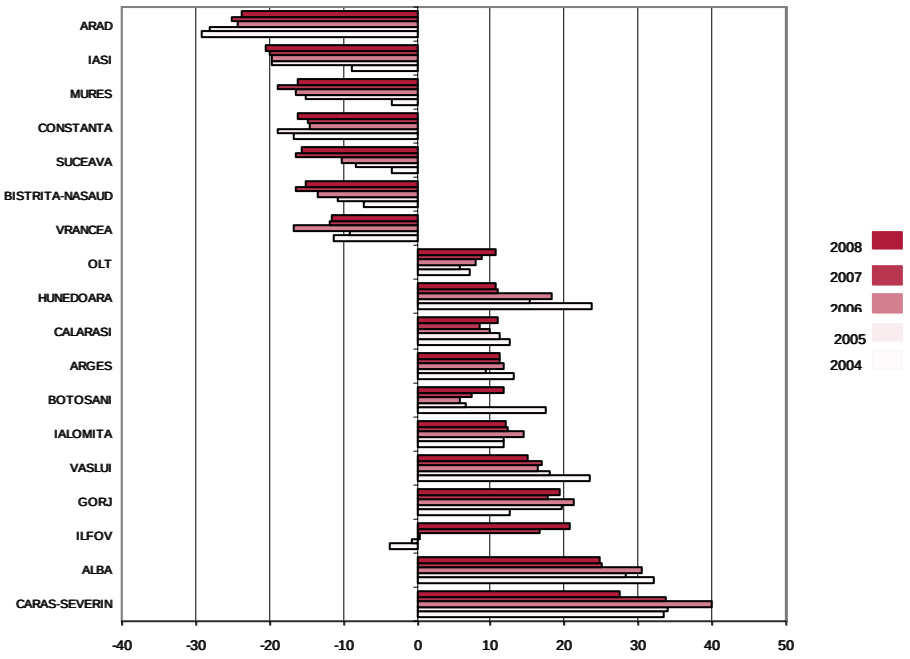
Most of the cases and the highest increase were recorded in Bucharest, then in districts having large clinical hospitals, like Cluj, Dolj, Constanța, by also in districts having a lot op population - Prahova. Although the number of cases increased continuously at national level, there are districts with a true excess of cases, evaluated through gross rate and

Table 1. The structure of cases discharged during 2004-2008, according to the sex and the residency of the patient

	No of cases (males)	No of cases (females)	Total no of cases (sex recorded)	No of cases rural	No of cases urban	Total no of cases (residency recorded)	No of reporting hospitals
2004	43.88%	56.12%	4391426	46.34%	53.66%	4186006	371
2005	43.61%	56.39%	4484154	44.89%	55.11%	4461978	
2006	43.45%	56.55%	4468404	44.95%	55.05%	4459486	
2007	44.06%	55.94%	4755816	44.26%	55.74%	4746697	
2008	44.37%	55.63%	4933028	43.41%	56.59%	4933028	485

(Data source: DRGNational database)

Figure 1. Districts having excess or deficit as number of discharged cases, higher than 10%, standardization according to the residency, Romania, 2004-2008



(Data source: DRGNational database)

standardized rate also (after the residency), lik Bucharest, Caras Severin, Alba, Hunedoara, Gorj, Ilfov. Other districts, like Vrancea, Suceava, Bistrița Năsăud, Iaşi, Arad, Satu Mare, have deficit in activity. (Figure 1).

The analysis of discharged cases, according to the age group, shows that the structure after this parameter was maintained quite constant during the 5 years studied period. The age group 0-4 years cumulated about 12% from all discharged cases and 10% from all hospitalization days, but the 60 years old and over cases had a tendency of increase, from about 27% of cases and 32% from hospitalization days in 2004, to 32% of cases and 35.8% from all hospitalization days in 2008 (Figure 2).

Taking into account the increasing tendency of the discharges, as well as the hypothesis quoted by the international literature, which states that a lower standard of living is associated with a higher rate of the illnesses and a high number of hospital admissions, we followed the general trend of the two economic indicators during the survey period.

Thus, even if, according to the quoted hypothesis, we would expect to find a decrease of economic indicators, we noticed that both gross domestic rate (GDP) and the average net wage had a general increasing tendency between 2005-2008 (for 2004 the data were unavailable) (Table 2).

The average length of stay (ALOS), decreased continuously at national level from 7,16 to 6,49, simultaneously with the increase of the number of cases. Still, there are geographic and age group differences. The cases in the 60 zears and over age group have the longest ALOS, but the 0-4 years old age group has ALOS longer than 5-14 years old age group (Figure 3, Table 3).

Simultaneously with the increase of the number of cases, the increase in the number of surgical procedures also occurred, thus the gross rate of discharges/1000 inhabitants reached from 43/1000 to 52/1000 in 2008 (Figure 4).

The variation coefficient of principal surgical procedures (PSP) calculated based on the district of residence proves that moderate geographic variations exist, concerning the frequency of the principal surgical procedures- PSP (CV 13% for the gross rate of PSP/inhabitants and 12% for gross rate of PSP/number of discharges). Thus, some districts having large hospitals (Bucharest, Iasi, Braşov, Timiş) exceeded the national average, but others-Tulcea, Bacău, Suceava, Vrancea are much under the average.

If the discharge rate increased with 16%, the gross rate of PSP increased with 21% during the studied period. The analysis performed for 2008 shows that the highest percentage of PSP from the total number of discharges having a PSP was found in patients from Bucharest, Cluj and Prahova. The highest percentage of cases with PSP at national level was found in Caraş Severin; Alba; Ilfov; and the lowest in Arad, Iaşi, Mureş. Bucharest leads the hierarchy of gross PSP rate at 1000 inhabitants, but is only on the 9th position as gross PSP rate/1000 discharges.

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Figure 2. The structure of discharged cases according to the age group, Romania, 2004-2008

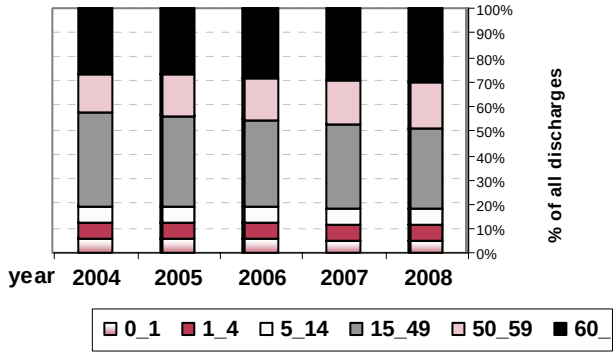


Figure 3. The evolution of ALOS, national level, 2004-2008

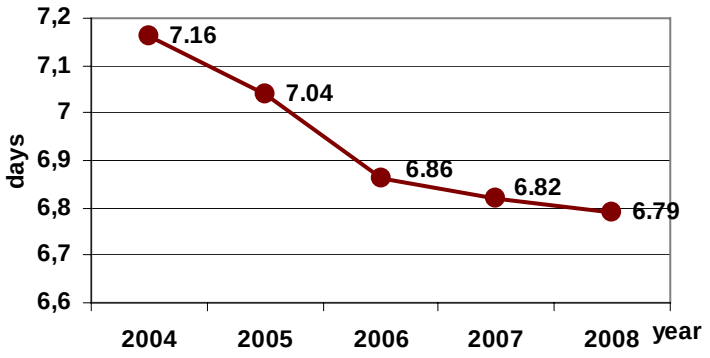


Figure 4. The evolution of gross rate of discharges and principal surgical procedures, Romania, 2004-2008

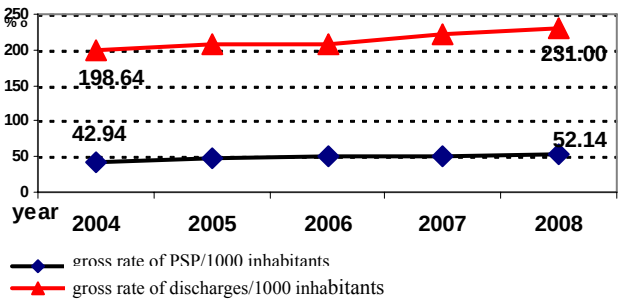


Table 2. The analysis of the evolution of economic indicators and of the gross rate of discharges 2005-2008, Romania

Indicator	Year 2005	Year 2006	Year 2007	Year 2008
Gross rate of discharges (discharges/1000 inh)	206	207	220	229
GDP/inh /year (euro)	3634.06	4342.44	5252.89	6508.53
Average net earnings per person per month	201.14	231.89	272.38	240.70

(Source: DRGNational database, National Institute for Statistics, National Commission for Prognosis

Figure 5. Top 5 principal surgical procedures for cases 1-4 years old, Romania, 2005-2008

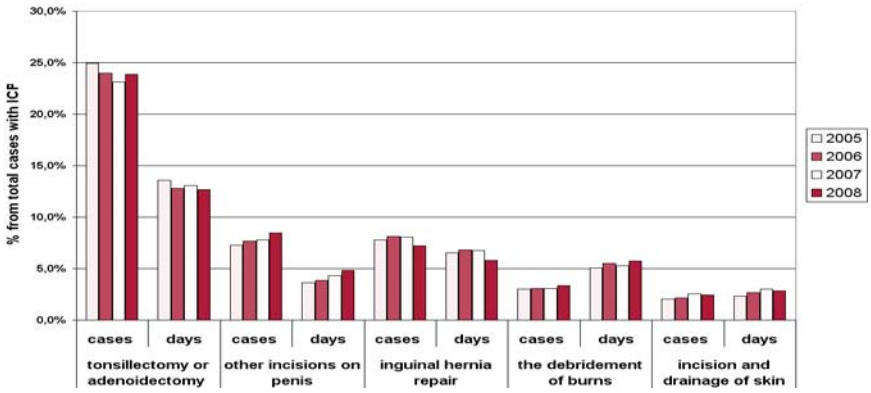
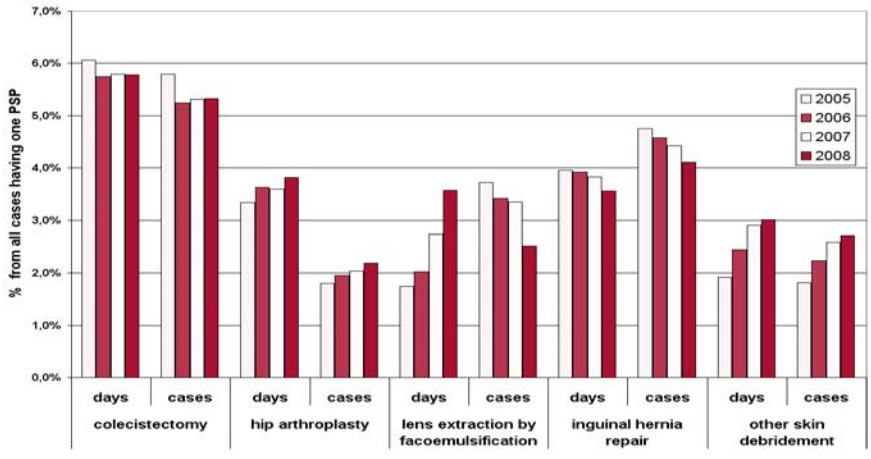


Figure 6. Top 5 principal surgical procedures for cases 60 years old and over, Romania, 2005-2008



(Data sources for figures:DRGNational database)

There are differences in surgical practice according to the age group of the patients. For the entire studied period the most frequent surgical principal interventions were appendicectomy, caesarian section, delivery, colecistectomy, curettage of uterus, lens extraction and inguinal hernia repair, each having about 2-6% from all cases with PSP.

A closer look inside the age group reveals different aspects. Thus, the most frequent surgical principal intervention in children 1-4 years old were tonsillectomy and adenoidectomy (almost one quarter from cases having a PSP at this age), followed by incisions on penis (for phimosis, most often), inguinal hernia repair, burn debridement, incision and tegument drainage.

These interventions accounted to about 45% from all cases with PSP, but also consumed a lot of the hospitalization days corresponding to cases having PSP at this age (almost 30% from all days (Figure 5).

For the age group 60 years old and over, the hierarchy of the most frequent surgical principal interventions is different: although on top as frequency are extracapsular extraction of crystalline lens by phacoemulsification, colecistectomy, inguinal hernia repair , excision of lesion of skin and subcutaneous tissue, excisional debridement of skin and subcutaneous tissue, if we look over the top of hospital stays, the situation changes. The PSP having the highest hospital days consumption are colecistectomy, arthroplasty of hip, extracapsular →

Table 3. Average length of stay, according to the age group, 2004-2008, Romania

Anul / Grupa	DMS 0-4	DMS 5-14	DMS 15-49	DMS 50-59	DMS 60_
2004	6.39	5.53	6.50	7.80	8.54
2005	5.93	5.51	6.41	7.72	8.39
2006	5.72	5.30	6.20	7.49	8.17
2007	5.46	5.23	6.16	7.53	8.06
2008	5.38	5.17	6.13	7.48	7.98

(Source: DRGNational database)

extraction of crystalline lens by phacoemulsification, inguinal hernia repair, excisional debridement of skin and subcutaneous tissue. It is to be noticed the increasing tendency of the arthroplasty of hip, both as number of cases and as hospital days. An interesting evolution have the extracapsular extraction of crystalline lens by phacoemulsification (surgery for cataract)-even they decrease as percentage from the total number of cases having a PSP, they have the tendency to consume more hospitalization days (Figure 6).

CONCLUSIONS

Given the findings of the study, but also analyzing the international context, it seems like, even if Romania allocates for health about 4.7% from GDP (2006), meaning almost one half from the amount allocated in average by EU countries, in our country occur more admission episodes at 100 inhabitants (about 25 comparing to 18 in EU).

The use of acute hospital services increased during our 5 years long survey (as well as in other EU states) [5], both as number of cases and hospital days. This tendency in our country could be due to the shortening of hospital stay, induced by law – the Framework contract concerning the medical assistance and its implementing rules.

Surgical activity had also is increasing tendency. This activity raise are uneven distributed in territory and between patient's age group. Female patients and those living in urban areas consume more hospital services than males or rural residents.

The highest frequency of total cases but also of surgical cases is recorded in Bucharest, but also in districts with large university centers, like Cluj or Constanta.

Although the international literature states that a higher service consumption is associated with a lower standard of living (due to the higher frequency of the disease and to hospital admission in late stages of the disease), our analysis shows that the increase in gross rate of discharges occurred together of the increase in the GDP per inhabitant and in the average net wage per inhabitant, as economic indicators for the standard of living.

The vulnerable age groups (children 1-4 years and elderly) consume an important percentage from cases and hospital days, have a longer ALOS than other age groups an a certain specificity of PSP.

The high frequency of tonsillectomies in children rises some question marks, since these interventions account to about one quarter from all PSP in children 1-4 years old. Are they, however, all justified, or there is a supply-induced demand? The amigdalectomy is recommended according to the frequency of acute episodes. The American Academy of Otolaryngology considers that patients having 3 or more acute episodes of tonsillitis per year, inspite of the adequate medical treatment, and be candidates for tonsillectomy. Another indication is represented by the recurrence of the disease simultaneously with the status of carrier for streptococcus and the lack of response to the treatment with beta-lactamase antibiotics. In spite of high prevalence of amigdalectomy and tonsillectomy, a very few studies were conducted for establishing of their impact on the quality of life [6]. Still, is it necessary that all tonsillectomies to be carried out in continuous hospital care, or most of them could be solved through day surgery, similar with other countries?

In elderly, the increase in arthroplasty of hip could be a serious concern, since is associated with long hospital stay, high costs and high risk for complications. Taking into account the fact that in many countries THA is monitorized as an indicator for the quality of care, its epidemiology and also potential medical practice variation the related in hospital care should be further investigated. The conclusions of quoted studies leads to the idea that, at international level, variations in THA delivery in hospital care are costly and dangerous, and most of the health systems focus on the reduction of the ALOS and postoperative complications. That could be accomplished by insuring the adequate expertise of surgeons (higher number of THA performed/year, special undergraduate qualification) or at hospital level, but also trough the implementation of practice protocols and clinical pathways for these [7].

In our country also, the practice and the outcome of the tonsillectomies or THA should be studied, and case mix data can be further analyzed and interpreted, and the details revealed may support informed decisions in hospital management.

References

1. SUTHERLAND, Jason M., Ph.D., FISHER, Elliott S., M.D., M.P.H., and SKINNER, Jonathan S., Ph.D.-Getting Past Denial — The High Cost of Health Care in the United States n engl j med 361;13 nejm.org september 24, 2009.
2. INCDS- studiu PN 03-01 - Impactul caracteristicilor socio-demografice actuale şi de perspectivă asupra necesarului de servicii de sănătate- Analiza variaţiilor de practică medicală spitalicească pentru populaţia vârstnică, în context regional, nepublicat.
3. http://www.ms.ro/?pag=16, Planul strategic al Ministerului Sănătăţii pentru perioada 2008-2010.
4. CHIRIAC, N., STAMATE, M.- *Variatii de practica medicala- o introducere in subiect*, Management in Health Journal; vol 12; 3; 10-16, 2008.
5. http://www.euro.who.int/en/what-we-do/data-and-evidence/databases/european-health-for-all-database-hfa-db2.
6. PARADISE, J. L.- Tonsillectomy and adenoidectomy in children. http://www.uptodate.com/online/content/topic.do?topicKey=ped_lryn/2305&view=print 7/11/2009.
7. The National Audit Office -Hip replacements: getting it right first time, , HC: 417 1999-2000, ISBN: 0105567493, Publication date: 19 aprilie 2000.