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DYNAMICS OF THE ACTIVITIES OF HOSPITAL HEALTH INSTITUTIONS IN BULGARIA

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Abstract
The hospital system is the main consumer of healthcare resources. The purpose of this study is to analyze the dynamics of the activity of the hospital medical institutions in Bulgaria. Material and methods: The development of basic planning indicators of the facilities of the individual groups of hospitals in the period 2012-2015 is monitored. Documentary, statistical methods and economic analysis are used. Results: A major problem for our health care is the excessive increase in the number of hospitals, mainly in the private sector. The number of hospitalized patients is particularly worrying, as it is much higher than in other countries. The use of beds at the end of the period under consideration for the sector remains low. A trend of reduction marks and the turnover of the beds. Conclusions: The rationalization of the supply, efficiency and relevance of hospital services and the resulting reduction in unnecessary hospitalization should be a key element of the reform of the organization and the structural configuration of the healthcare system in the country.

Keywords: Dynamics of activity, hospital medical institutions, analysis, basic planning indicators.

INTRODUCTION

Hospital is the most complex institution in the modern healthcare system. Hospital service is the most expensive compared to the other service types. The hospital system is the main consumer of healthcare resources. Its functions restore health, prevent disability, in many cases are life saving, due to its mission and social position, the hospital is the backbone of medical care and a factor that best defines public attitude and opinion about healthcare.

Continuously rising health care funds put to health officials the issue of cost-effective allocation and spending of health resources. The efficiency degree is a ratio between the activity results resources expenses. Achieving the optimum level of efficiency means reaching a certain level of activity with an optimum level of resources. I.e, the cost of resources should be adequate for the activity (Berenguer, 1994).

Management of diagnostic and treatment process in the hospital has to ensure efficient use of personnel labour and the medical equipment, available diagnostic and therapeutic methods, and tools of different nature (including future development in this respect), so as to achieve the most favourable outcome of disease in the most rational use of hospital resources (Nikolova, 1998).

Hospital beds are the main material resources of the hospital. It is necessary to establish a link between the actual use of beds and their theoretical maximum use (Berenguer, 1994). Whether the beds are more or less used, in terms of effectiveness, the stay can be adequate or not. In order to measure the efficiency in the use of hospital beds, one takes the average stay.

The number of bed-days for every single patient is determined by the disease and depends directly on the clinical estimation of the doctor. It depends on outer factors, too, which are different than the doctor's decision itself and are typical for the performance processes in other units (Varela, 1994).

Purpose

The purpose of this study is to analyze the dynamics of the activity of the hospital medical institutions in Bulgaria.

MATERIAL AND METHODS

The development of basic planning indicators of the facilities of the individual groups of hospitals in the period 2012-2015 is monitored. Documentary, statistical methods - analysis of phenomena dynamics, table and graphic analysis (to illustrate the obtained results) and economic analysis are used.

RESULTS AND DISCUSSION

A major problem for our health care is the excessive increase in the number of hospitals, mainly in the private sector. The number of hospitalized patients is particularly worrying, as it is much higher than in other countries. The use of beds at the end of the period under consideration for the sector remains low. A trend of reduction marks and the turnover of the beds. The change in the indicators by type of hospital and type of beds varies widely, which depends mainly on the nature of the hospital's activity. The analysis does not include hospitals to other departments.

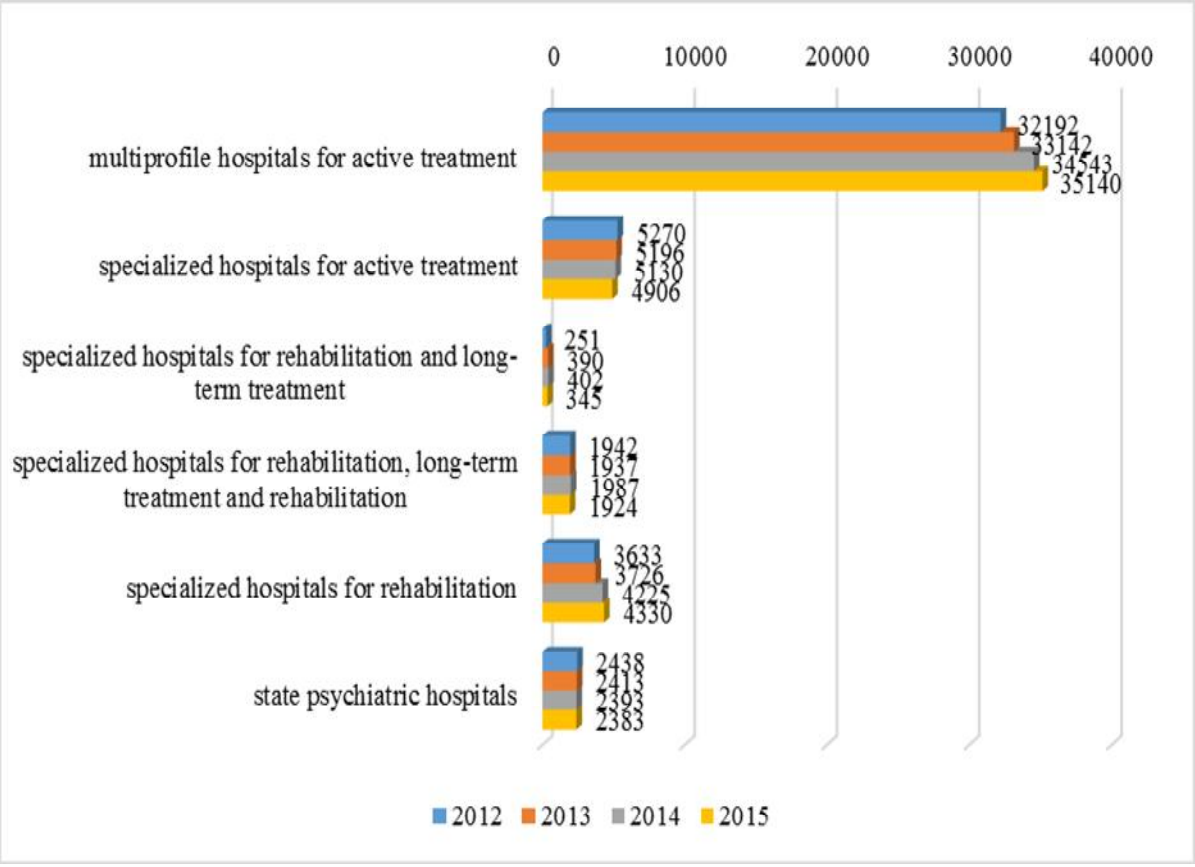

Figure 1: Number of hospital beds

For the period under review, the trend in the number of beds is as follows:

Their total number of 42,021 in 2012, with a provision of 57.7 per 10 000 people, rises to 45 423 in 2015, with a provision of 63.5 per 10 000 people.

We see an increase in beds for active treatment from 32 609 (with a provision of 44.8 per 10,000 people) to 34,907 and a provision of 48.8 per 10,000 people.

For each region of the country, the need for hospital beds should be determined on the basis of European norms, morbidity and demographic profile of the population, specific needs (infectious diseases, neonatology, etc.). The number of beds should be mobile and vary over the years according to the demand for health care according to the quality and the results of control over the medical activities (National Health Strategy 2020, Ministry of Health).

One feature of this superfluous infrastructure is the usability of hospital services, which is much higher than the average. While the data of hospitalizations in the region has either stabilized or decreased over time, an alternative trend in increasing hospital treatment is currently observed in Bulgaria.

The dynamics of hospital admissions for individual types of hospitals is as follows (Figure 2):

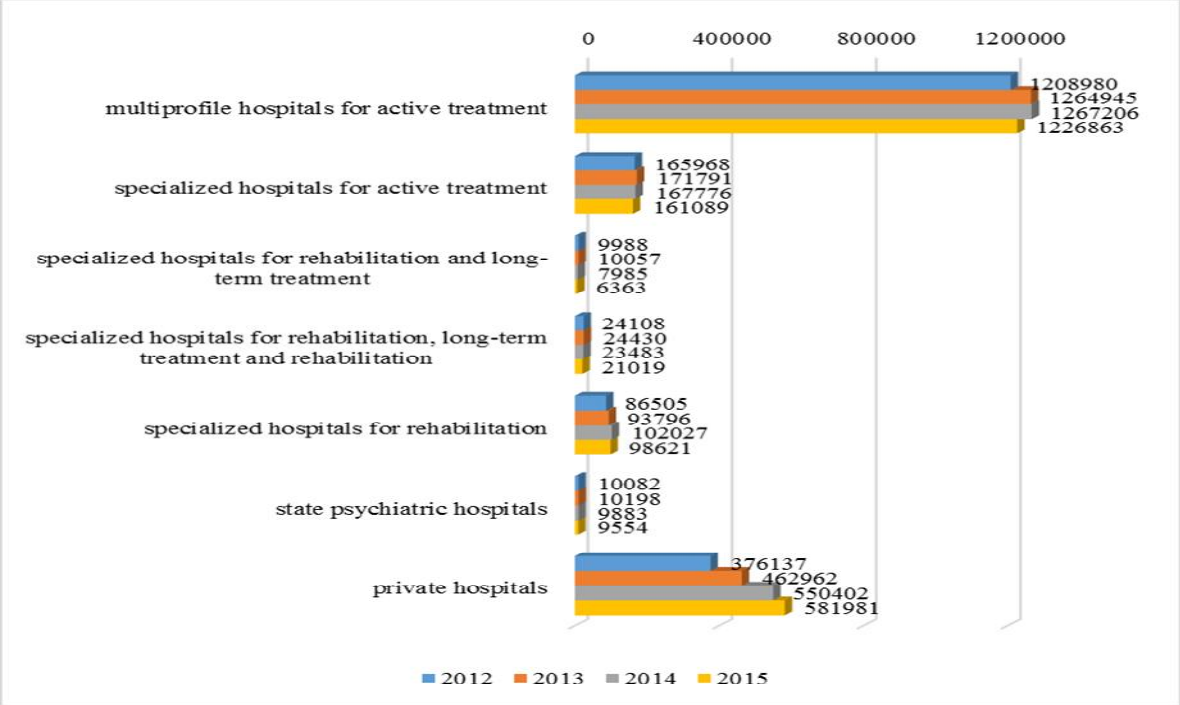

Figure 2: Admitted patients

For the period 2012-2015, the highest relative share of growth was observed in private hospitals - by 54.73%. The number of admitted patients in specialized rehabilitation hospitals also increased by 14.01%, as well as the number of admissions in multi-profile hospitals for active treatment – by 1.48%.

The strongest decrease in the number of patients, with 36.29%, is in the specialized hospitals for further treatment and long-term treatment. A reduction of 12.81% has been reported in specialized hospitals for further treatment, long-term treatment and rehabilitation. The number of admitted

patients in state psychiatric hospitals decreased by 5.25%, and in specialized hospitals for active treatment – by 2.94%.

The number and relative share of hospital admissions is particularly worrying, as they are much higher than in other countries.

An analysis of hospitalizations in Bulgaria in 2013 suggests that at least 20 percent of the procedures there could have been performed under basic out-of-hospital conditions (World Bank, 2013). These admissions for hospital services, most of which do not require to be performed in a hospital, do not even report late-stage conditions such as cancer, congestive heart failure or diabetes-related amputations that should be identified and treated in conditions of primary care (National Health Strategy 2020, Ministry of Health).

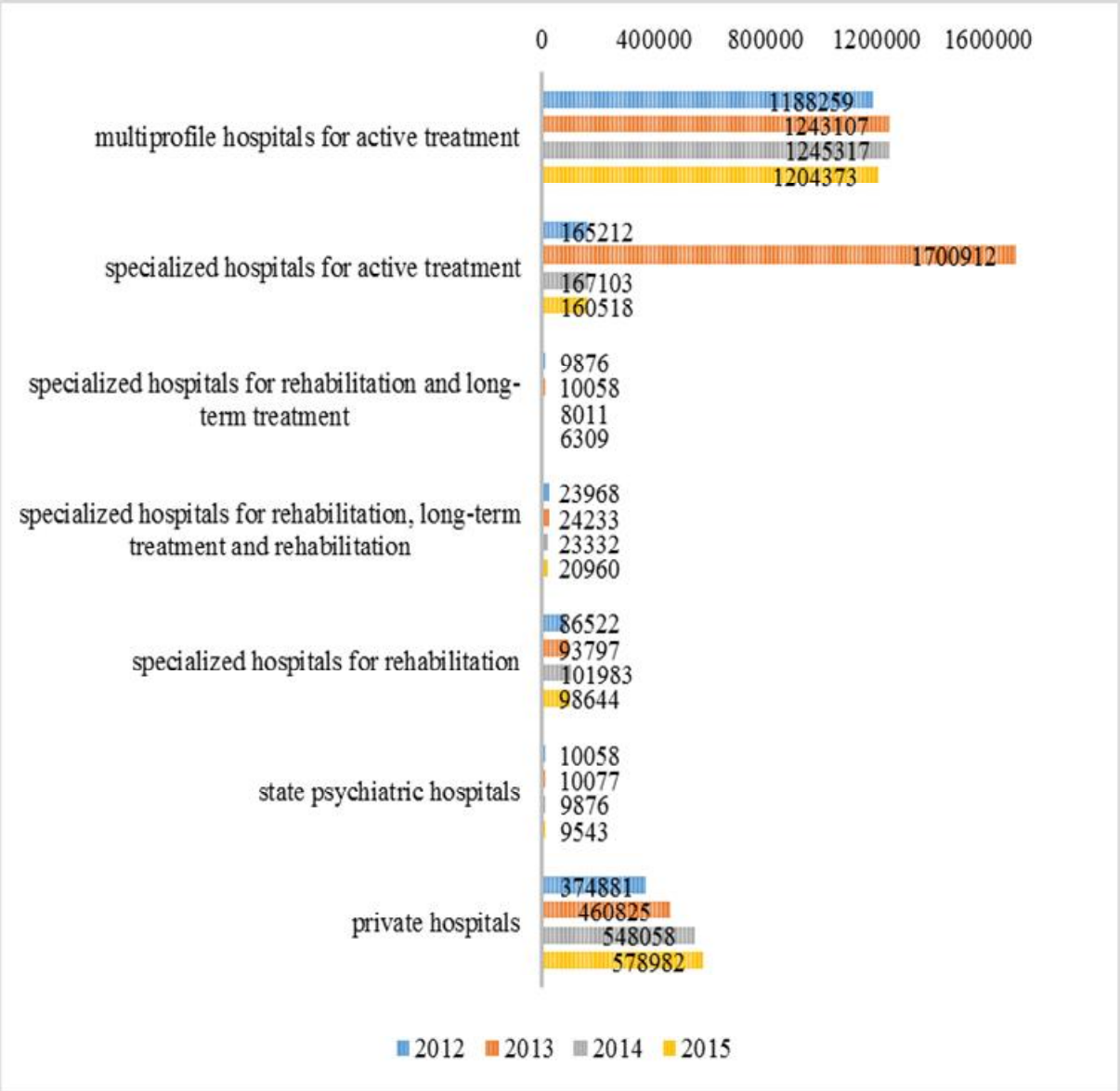

Figure 3: Discharged patients

Similar to the number of patients admitted is the situation with the number of discharged patients for the four-year period considered.

The highest percentage increase was registered in private hospitals (54.44%) following the established trend in recent years to direct the flow of patients to private hospitals.

There is an increase in the number of discharged patients from specialized rehabilitation hospitals by 14.01% and from multi-profile hospitals for active treatment – by 1.36%.

The number of releases from specialized hospitals for further treatment and long-term treatment decreased by 36,12%, and the number of releases from specialized hospitals for further treatment, long-term treatment and rehabilitation – by 12.55%. The number of releases from state psychiatric hospitals decreased by 5.12%, and from specialized hospitals for active treatment by 2.84%.

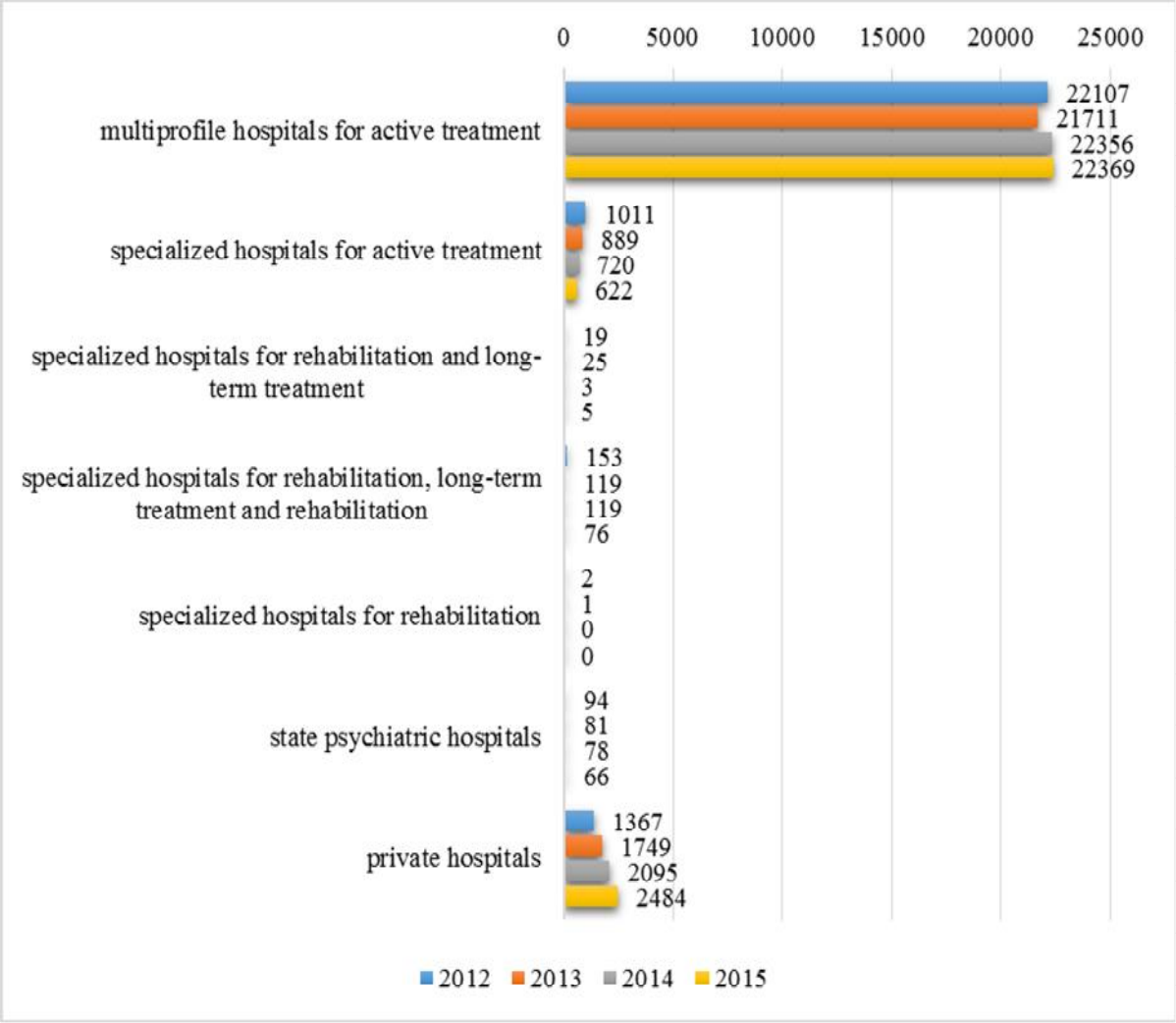

Figure 4. Dead patients

For the period 2012-2015, the highest absolute value and the highest relative share of the increase of dead patients were observed in private hospitals. From 1 367 in 2012, their number increased to 2 484 in 2015, which is a percentage of 81.71%.

There is a slight increase in their number in multi-profile hospitals for active treatment, i.e. 1.19%.

In all other types of hospitals there is a decrease. In the specialized hospitals for rehabilitation and long-term treatment the decrease is 73.68%, in the specialized hospitals for further treatment and rehabilitation the decrease is 50.33% and in the specialized hospitals for active treatment - 38.48%.

Table 1: Bed-days

Medical institutions	2012	2013	2014	2015
Multi-profile hospitals for active treatment	6535483	6680008	6571104	6303764
Specialized hospitals for active treatment	986670	960729	905482	813643
Specialized hospitals for rehabilitation and long-term treatment	82244	108335	100653	93430
Specialized hospitals for rehabilitation, long-term treatment and rehabilitation	245772	269977	263008	238908
Specialized hospitals for rehabilitation	651861	702398	747081	717455
State psychiatric hospitals	690314	684697	662292	621445
Private hospitals	1362959	1670242	2039769	2172469

Source: National Statistical Institute

Most bed-days are reported in multiprofile hospitals for active treatment. In 2012, as shown by Table 1, there are 6 535 483 bed-days reported. After a small increase in 2013, their number gradually started to decrease and in 2015 it reached 6 303 764. For the four-year period, the decrease is by 3.55%.

There is a decrease by 17.54% in the above indicator in specialized hospitals for active treatment, by 9.98% in state psychiatric hospitals and by 2.79% in specialized hospitals for further treatment, long-term treatment and rehabilitation.

The situation in private hospitals, where the tendency is towards a constant increase in the number of bed-days, is radically opposite. From 1 362 959 in 2012, their number reached 2 172 469 in 2015; the increase is by 59.39%.

An increase in the number of bed-days is also observed in specialized hospitals for further treatment and long-term treatment - by 13.60%, and in specialized hospitals for rehabilitation - by 10.06%.

Table 2: Usability of beds in days

Medical institutions	2012	2013	2014	2015
Multi-profile hospitals for active treatment	266	271	266	256
Specialized hospitals for active treatment	278	279	273	258
Specialized hospitals for rehabilitation and long-term treatment	302	297	260	271
Specialized hospitals for rehabilitation, long-term treatment and rehabilitation	260	283	263	268
Specialized hospitals for rehabilitation	235	256	272	262
State psychiatric hospitals	282	282	277	261
Private hospitals	204	217	223	218

Source: National Statistical Institute

The highest is the relative share of increase in the utilization rate of beds in days in specialized hospitals for rehabilitation, i.e. 11.49%. From 260 in 2012, the utilization of beds increased to 268 days in 2015. The indicator also grew by 6.68% at the end of the period under review in private hospitals, as well as by 3.08% in specialized hospitals for further treatment, long-term treatment and rehabilitation.

The utilization rate of beds in days is the most decreased in specialized hospitals for further treatment and long-term treatment – by 10.26%, in specialized hospitals for active treatment – by 7.19%, and in multiprofile hospitals for active treatment – by 3.76%.

The bed utilization rate at the end of the period considered for the sector remains low (67%), which means that 1/3 or 33% of the total bed capacity in the country is not used. This forms 16,000 vacant hospital beds, the maintenance of which costs resources without adequate health needs (Annual report on the health status of the citizens in the Republic of Bulgaria and implementation of the National Health Strategy 2015). The lowest rate is in private hospitals - 218 days.

Table 3:Turnover of beds

Medical institutions	2012	2013	2014	2015
Multi-profile hospitals for active treatment	50	52	52	50
Specialized hospitals for active treatment	47	50	51	51
Specialized hospitals for rehabilitation and long-term treatment	37	28	21	19
Specialized hospitals for rehabilitation, long-term treatment and rehabilitation	26	26	24	24
Specialized hospitals for rehabilitation	31	34	37	36
State psychiatric hospitals	5	5	5	5
Private hospitals	57	60	60	59

Source: National Statistical Institute

The optimum bed utilization rate is considered to be 85%, as it allows a certain number of vacant beds to be accommodated, allowing for flexibility in the admission of planned cases as well.

This important indicator for the organization of hospital care generally shows a downward trend. The most significant is the reduction in specialized hospitals for further treatment and long-term treatment - by 48.65%, followed by specialized hospitals for further treatment, long-term treatment and rehabilitation - 7.69%.

The bed turnover figures show a slight increase in specialized hospitals for rehabilitation, ie. by 16.13%, and in specialized hospitals for active treatment - by 8.5%.

The value in state psychiatric hospitals is constant – 5%.

In multi-profile hospitals for active treatment, following a slight increase in 2013 and 2014, there was again a return to baseline in 2015.

Table 4. Average stay of a treated patient – days

Medical institutions	2012	2013	2014	2015
Multi-profile hospitals for active treatment	5.4	5.2	5.1	5.1
Specialized hospitals for active treatment	5.9	5.6	5.4	5.0
Specialized hospitals for rehabilitation and long-term treatment	8.2	10.6	12.4	14.5
Specialized hospitals for rehabilitation, long-term treatment and rehabilitation	10.1	10.9	11.1	11.2
Specialized hospitals for rehabilitation	7.5	7.5	7.3	7.3
State psychiatric hospitals	58.5	57.8	57.3	55.7
Private hospitals	3.6	3.6	3.7	3.7

Source: National Statistical Institute

The average hospital stay is common information that is provided when presenting data on the activities of a hospital. It is also used when comparing the activity of various hospitals and in analyzing development of a hospital over the years (Varela, 1994).

It should be noted that estimating the average hospital stay is a complex task and cannot be simplified. In Bulgaria, in recent years, there is a trend for any reduction in average stays to be seen as a positive indicator for hospital activity. This one-sided approach can hide certain risks. (Yaneva, 2011)

In the present study, the trend in the average hospital stay of a treated patient in days is as follows:

The highest is the rate of increase in specialized hospitals for further treatment and long-term treatment - 76.83%. Quite lower is the increase in specialized hospitals for further treatment, long-term treatment and rehabilitation - 10.89% and the lowest is in private hospitals - 2.78%.

In other types of hospitals there is a decrease in this indicator. In specialized hospitals for active treatment, the decrease is by 15.25%, in multi-profile hospitals for active treatment – by 5.56%, in state psychiatric hospitals - by 4.79% and in specialized hospitals for rehabilitation – by 2.67%.

PROBLEMS AND POSSIBLE DIRECTIONS FOR OPTIMIZING THE ACTIVITY OF MEDICAL INSTITUTIONS FOR HOSPITAL CARE IN OUR COUNTRY

Outlining the problems

The comparison between the provision of hospital beds in Bulgaria to the EU average indicates that according to this parameter, Bulgarian healthcare should be ranked at least at the medium to high levels. However, the Organization for Economic Cooperation and Development's research on the European Health Consumer Index in recent years has revealed an unfavorable picture for our country. Our country is generally ranked last in terms of quality of healthcare, complex results, coverage and access to health services.

In order to satisfy their economic interests, hospitals, irrespective of their ownership, commit numerous medical violations: admission of patients without sufficient medical grounds, deliberate violation of the proper classification of patients under clinical pathways, severity of the condition, selection of patients for admission according to the expectations of the amount of the cost of their treatment and their re-direction to other hospitals (Annual report on the health status of the citizens in the Republic of Bulgaria and implementation of the National Health Strategy 2015).

As a challenge to modern hospitals, it can be pointed out that hospitals are very difficult to succumb to structural and cultural change. The functions of the hospital itself are traditionally conservative and resistant to change. In the modern health situation, however, there is a need for a high degree of hospital flexibility due to the presence of trends that will continue in the future:

- pressure to reduce the length of stay in hospitals;
- use of market or quasi-market mechanisms to increase the efficiency of medical activities;
- efforts to ensure higher quality of medical care;
- Efforts to achieve high levels of access, as well as close cooperation with primary care and other services located outside the hospital.

Difficulties come from the fact that trends in the health status of the population can be predicted, but it is very difficult to predict technological changes or changes in the healthcare system. Account must also be taken of the existing differences between the countries of the region as a result of differences in the history, culture and political specificities of the countries.

Differences in the funding, organization and management of healthcare systems are reported. Moreover, the term "hospital" covers different types of institutions - from university hospital complexes with several thousand staff to those in condition that would hardly be defined as a hospital environment (Vodenicharov, 2013).

The current state of the hospital system can be synthetically characterized and assessed as insufficiently effective and low-efficacious, i. e. inadequately good medical results obtained at higher costs.

POSSIBLE DIRECTIONS FOR OPTIMIZING THE ACTIVITY OF MEDICAL INSTITUTIONS FOR HOSPITAL CARE

Establishing a balance between the hospitalization needs, the organization of the system, the quantity and quality of resources for their satisfaction

In Bulgaria, as a result of the lack of effective mechanisms for planning and regulating the capacity of hospital structures, the hospital sector is characterized by a large number of hospitals and hospital beds and a disrupted bed structure with a preponderance of active treatment beds.

This superfluous infrastructure is also accompanied by a higher consumption of hospital services than the EU average. An analysis of the hospitalizations in Bulgaria, prepared by the World Bank in 2013, showed that at least 20 percent of hospital-staged procedures could have been be performed in outpatient settings.

At the same time, outpatient examinations are comparatively less.

In this regard, the EU Recommendation on Bulgaria's National Reform Program for 2014 is: *„to provide cost-effective provision of health care, including by improving pricing for healthcare services by linking hospital funding to results, accelerating the optimization of the hospital network and developing opportunities for outpatient treatment"* (Health Goals 2020" Concept, Ministry of Health, 2015).

In this respect, an important strategic task should be to regulate a new type of interaction between outpatient and hospital care.

A key element of the reform of the organization and the structural configuration of the healthcare system in the country should be to streamline the supply, efficiency and relevance of hospital services and the resulting reduction in unnecessary hospitalizations.

The ultimate aim should be to optimize the network of hospitals for active treatment and reduce the number of beds in them, while preserving and increasing their abilities to treat acute illnesses, developing high-tech diagnostic and treatment services and increasing the support role of the outpatient care system, rehabilitation structures, long-term care, long-term care, etc. ("Health Goals 2020" Concept, Ministry of Health, 2015).

It is important to intervene in the introduction of new technologies, including endoscopic and other invasive diagnostic and therapeutic procedures, surgical interventions, drug treatment, etc. that will enable the early and quality diagnostics and the safe and effective treatment of an ever larger number of diseases.

There is a need for the development of criteria (indications) for hospitalization and de-hospitalization in a planned and urgent order, as well as the introduction of quality requirements and criteria for medical activities tied to the end result of hospital treatment as a basis for paying for hospital activities.

It is also important to improve the capacity and conditions in hospitals for long-term treatment and rehabilitation and in hospices, which will allow a significant percentage of patients with chronic illnesses or those in need of palliative care to be hospitalized in them rather than in the costly hospitals for active treatment.

There is a need to discuss and review the model "hospital - commercial company". It is useful for a wide range of activities in a hospital - nutrition of patients, serving units, clinical and other laboratories, diagnostic offices, etc. In practice, however, commercial activity is not an adequate option in treating patients and educating students, doctors and other healthcare professionals.

CONCLUSIONS

1. A major problem for our hospital health care is the excessive increase in the number of hospitals, mainly in the private sector. There is no state intervention and regulation, rules for their territorial location with regard to the population served and the necessary number of hospital beds.

In the general trends of the European Union, the development of hospital systems is highlighted by the reduction in the number of hospital beds, which makes them more intensive.

2. During the analyzed period 2012-2015, in our country there were no significant differences in the indicators for hospitalized patients by type of hospital beds, as well as in the number of beds in hospitals, their structure -% and their availability to 10,000 of the population. Relatively higher values were recorded in the middle of the period – 2014.

3. The highest relative share of increase in hospital admissions was observed in private hospitals - by 54.73%, over the recent trend of directing the flow of patients to private hospitals.

4. Similar to the number of patients admitted is the situation with the number of checked hospitalized patients (discharged + dead). The highest percentage increase in discharged patients (54.44%) and in dead patients (81.71%) is recorded in private hospitals. A slight increase (1.19%) in the deaths of patients is recorded in multi-profile hospitals for active treatment, and there is a decrease in their number observed in all other hospitals.

5. Most bed-days are reported in multi-profile hospitals for active treatment. In 2012, there are 6 535 483 bed-days reported. After a small increase in 2013, their number gradually started to decrease and in 2015 it reached 6 303 764. For the four-year period, the decrease is by 3.55%.

The situation in private hospitals, where the tendency is towards a constant increase in the number of bed-days, is radically opposite. The increase is by 59.39%.

6. The highest is the relative share of increase in the utilization rate of beds in days in specialized hospitals for rehabilitation, i.e. 11.49%. The bed utilization rate at the end of the period considered for the sector remains low (67%), which means that 1/3 or 33% of the total bed capacity in the country is not used.

7. The turnover of beds – an important indicator for the organization of hospital care, generally shows a downward trend. The most significant is the reduction in specialized hospitals for further treatment and long-term treatment - by 48.65%.

8. In the present study, in the average hospital stay of a treated patient, the highest is the rate of increase in specialized hospitals for further treatment and long-term treatment - 76.83%. The

slightest increase is in private hospitals – by 2.78%. In other types of hospitals there is a decrease in this indicator.

The average stay indicator is usually analyzed and evaluated simplistically and schematically in a purely statistical sense. This reduces its cognitive value as a tool for positively impacting the efficiency of hospital beds. The assessment of the average stay should be done together with other indicators for the hospital activity, as well as differentiated by different classes of diseases and nosological units.

10. The state of the hospital system in our country is indicative of one of the major failures of the health reform. The reasons for this failure are of a different nature: legal-normative, economic, organizational-management, inadequate structure of hospital beds in relation to the needs of hospitalizations, poor control of state and public funding organizations on hospitalization processes, quality and efficiency of hospital work, etc.

11. A key element of the reform of the organization and the structural configuration of the healthcare system in the country should be to streamline the supply, efficiency and relevance of hospital services and the resulting reduction in unnecessary hospitalizations.

12. Essentially, hospital resource issues are extremely complex. Each of the activities of training, specialization, qualification and management of healthcare personnel, design, construction, operation, maintenance and renovation of the facilities, provision of normal financing and efficient use of financial resources are a string of complex scientific and practical problems, which are subject to resolution by health managers.

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