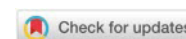


COMPARATIVE ANALYSIS OF THE ECONOMIC INDICATORS OF THE ACTIVITIES OF MULTI-PROFILE HOSPITALS FOR ACTIVE TREATMENT IN BULGARIA AND THEIR CHANGE AS A RESULT OF THE COVID-19 PANDEMIC

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Abstract: The purpose of the present study is to perform a comparative analysis of the change in the economic indicators for the activity of the multi-profile hospitals for active treatment from the public health care system in Bulgaria before and during the COVID-19 pandemic.

Methodology: The study used the following methods for processing and analyzing the received information: documentary method; system analysis method; comparative-analytical method; economical analysis; statistical methods – analysis of the dynamics of phenomena and graphic analysis.

The need to determine and compare the economic indicators of hospitals of one group is, on the one hand, for managers of inpatient facilities to compare the hospital they manage with other hospitals of the same group, and on the other hand, the problem is particularly relevant for financing institutions - the National Health Insurance Fund, the Ministry of Health and Municipalities.

Results and discussion: The main economic indicators for the activity of the medical institutions reflect the ratio of the expenses incurred by the medical institutions to the achieved results of the activity (patients passed, realized bed days, etc.), are used to evaluate the economic efficiency of the activity of the medical institutions and provide information about the "cost" of a particular type of medical care.

For the observed five-year period before the COVID-19 pandemic, an increase in the average values of all economic indicators for the activity of the University and national multi-profile hospitals for active treatment, as well as the Municipal multi-profile hospitals for active treatment is characteristic - with the exception of the decrease in their value per drug day. At the Regional multi-profile hospitals for active treatment, there is a decrease in the values of the economic indicators "average cost per bed", "average cost per food-day" and "average cost per medicine day" and a slight increase in the values of the indicators "average cost per single received patient" and "average cost per bed-day".

In the first year of the pandemic, 2020, in contrast to the previous year - 2019, there was an increase in the value of all economic indicators for the activity in the group of multi-profile hospitals for active treatment, most pronounced in the indicator "average cost per patient treated".

Conclusions: The healthcare crisis caused by the pandemic raises many questions about the adequacy of the healthcare system in the country, its capacity, opportunities and problems.

In response to the crisis, the government of the Republic of Bulgaria is increasing public spending on healthcare in 2020 by approximately BGN 628 million.

Keywords: *economic indicators of activity, average cost, multi-profile hospitals for active treatment, COVID-19 pandemic, crisis*

Field:3) Medical sciences and Health

INTRODUCTION

The economic analysis of the effectiveness of a given factor must be carried out, all other conditions being equal, because the analysis of the utilization of resources in health care includes a large number of indicators and different methods. The need to determine and compare the economic indicators of hospitals in a group is for managers of inpatient facilities to compare the hospital they manage with other hospitals in the same group by answering the following questions: Has the maximum effect of the technologically necessary combination of resources been achieved? Are costs per unit of activity or unit of health effect minimized? Is the capacity of the individual factor of production or of the medical facility

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relatively strained? [1,3]

The problem is particularly relevant for the financing institutions - the National Health Insurance Fund, the Ministry of Health and the municipalities.

The annual average values for the given hospitals are determined on the basis of expenses already incurred during the year. They are used for various analytical developments.

At the beginning of 2020, the world met with an unexpected and unmanageable disaster that overturned a number of ideas about the security of the world's health systems and the sense of safety and security of the modern European. Bulgaria suffered significant losses, expressed mainly in human casualties and economic consequences. The death rate data are cause for serious concern, which show that in terms of total mortality, Bulgaria is one of the leaders in Europe and even in the world. The challenge of COVID-19 put the entire health system of the country to the test during 2020-2021. The pandemic situation was extraordinary, very dynamic, requiring quick and adequate actions. [4,6]

As a result of the COVID-19 pandemic, there have been global changes in economic, social and health aspects worldwide. This led to the need for accurate statistics of economic and health indicators in order to properly manage and allocate available resources. [6]

Purpose

The purpose of the present study is to perform a comparative analysis of the change in the economic indicators of the activity of the multidisciplinary hospitals for active treatment from the public health care system in the Republic of Bulgaria before and during the COVID-19 pandemic.

Time of observation

In accordance with the purpose of the study, the information for the period 2015-2019 before the COVID-19 pandemic was observed, then 2019 was compared with the year of the beginning of the pandemic - 2020.

MATERIAL AND METHODS

The study used the following methods for processing and analyzing the information received: Documentary method - the source of the information is the annual reports of the medical facilities, which are received and processed annually at the National Center for Public Health and Analyses at the Ministry of Health; System analysis method; Comparative-analytical method; Economical analysis; Statistical methods – analysis of the dynamics of phenomena and graphical analysis.

RESULTS AND DISCUSSION

The main economic indicators of the activities of the medical treatments reflect the ratio of expenditures made by the medical institutions to the results of the activity (total number of patients, bed-days, etc.), are used for evaluation of the economic efficiency of the medical institutions' activities and provide information about the "price" of a particular type of medical care. [3,8]

The professional use of the rich information related to the diagnostic-treatment process supports both its planning, organization, financing, control, evaluation and forecasting, as well as its reflection in the overall activity of the departments. [1,2]

In the first year of the pandemic, Bulgaria reacted quickly and managed to increase and redistribute funding for hospital care. [6]

The change in the values of the main economic indicators for the activity of multi-profile hospitals for active treatment from the public health care system in Bulgaria is presented graphically (from figure 1 to figure 5).

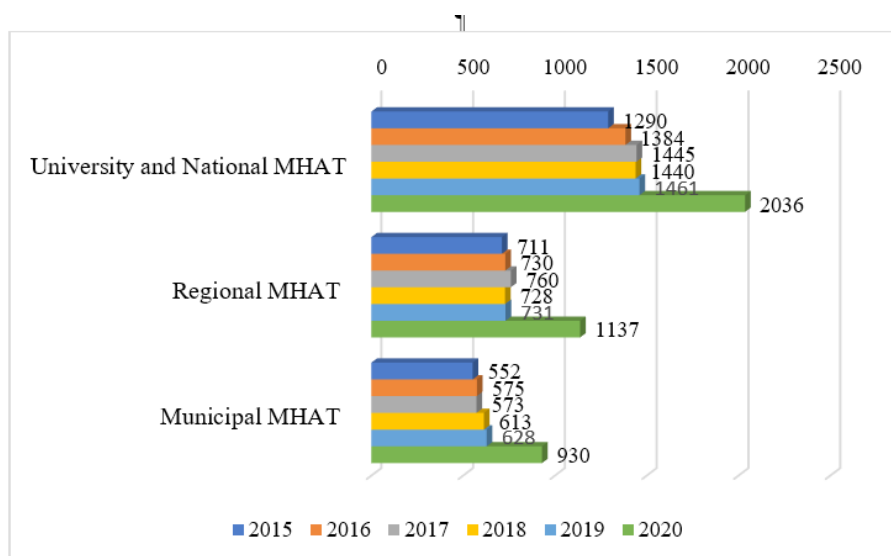


Fig. 1. Average cost per single received patient (in BGN)

The value of the costs for the indicator “average cost per single received patient” and its analysis provide information on the proportions in the distribution of financial resources between different types of hospitals. It is the basis for a more accurate and justified forecasting of the future needs of financial means to ensure the operation of the most widely provided medical aid. [2,3]

As can be seen in Figure 1, the average cost per patient transferred to the University and National MHATs for the period 2015-2019 increased by 13.26%, and from 2019 to 2020 - during the COVID-19 pandemic the increase is with 39.36%. For the Regional MHAT for the 5-year period before the pandemic, there was a slight increase in the values of this indicator, only by 2.81 percent, but significantly more pronounced for 2020 with 55.54%. At the Municipal Hospitals, the average cost of one transferred patient increased by 13.77% for the period 2015-2019, and from 2019 to 2020 – by 48.09%.

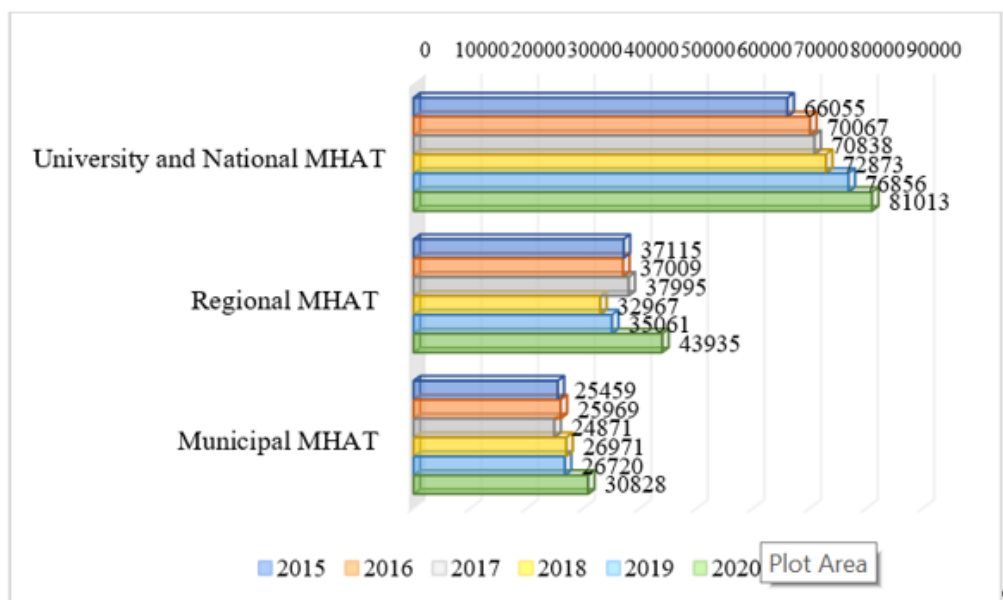


Fig. 2. Average cost per bed (in BGN)

The global value of one bed for a calendar year includes all the economic indicators of the hospital. With 16.35%, the “average cost per bed” indicator at the University and national MHAT for the 5-year observed period before the COVID-19 pandemic shows an increasing trend. Much weaker - only by 4.95 percent is its increase at the Municipal MHAT, while at the Regional MHAT we observe a drop of 5.59% for the same period. For the period 2019-2020, the highest increase in the values of this indicator

was for the Regional MHAT with 25.31 percent, followed by the Municipal MHAT - with 15.37% and the weakest for the University and National MHAT - with 5.41 percent.

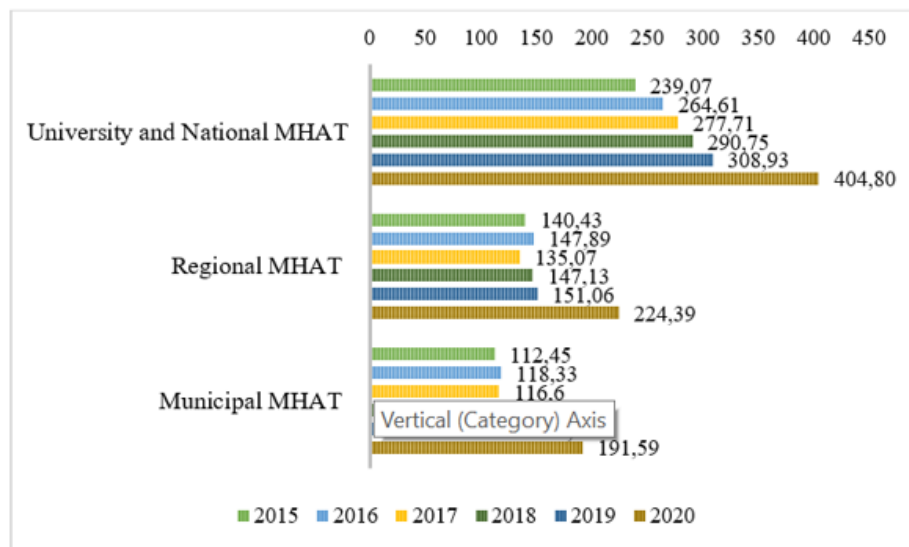


Fig. 3. Average cost per bed-day (in BGN)

The indicator “average cost per bed-day” shows an increasing trend in all groups of multi-profile hospitals for active treatment for the period 2015-2019, as follows: At UNMHAT, the increase was by 29.22%, at Regional MHAT by 7.57%, and at Municipal MHAT by 19.21 percent. The values of this indicator increased the most during the first year of the COVID-19 pandemic at the Regional MHAT - by 48.54%, followed by the Municipal MHAT - by 42.92 percent and UNMHAT - by 31.03%.

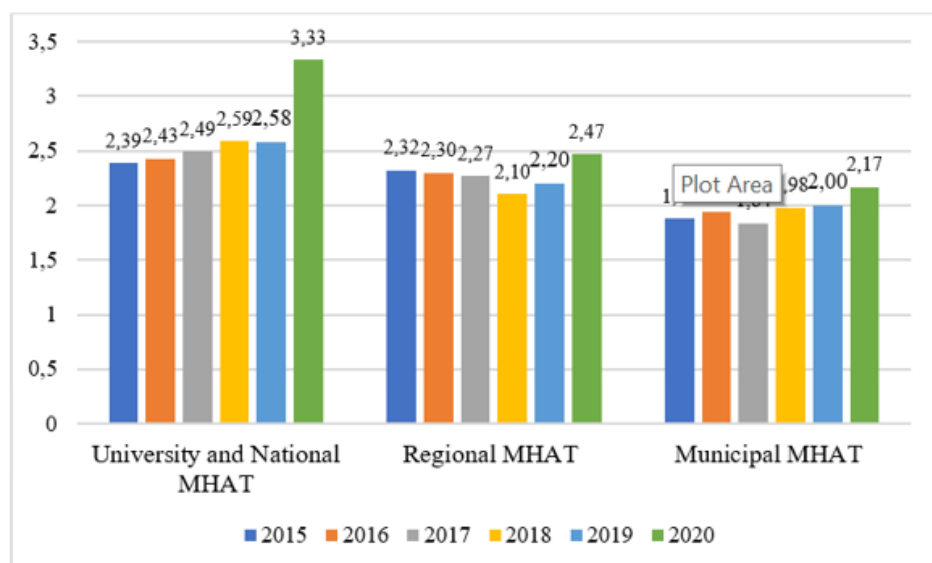


Fig. 4. Average cost per food-day (in BGN)

In Figure 4, we observe the change in the values of the “average cost per food-day” indicator. For the initially considered period of 2015-2019, there was an increase of 7.95% for the University and national MHAT, and 6.38% for the Municipal MHAT. But at the Regional MHAT, the trend is towards a decrease in these values - by 5.17%. For the period 2019-2020, the highest, i.e. by 29.07% is the increase in the values of this indicator at the University and National MHAT, followed by an increase of 12.27% at the Regional MHAT and only by 8.5 percent at the Municipal MHAT.

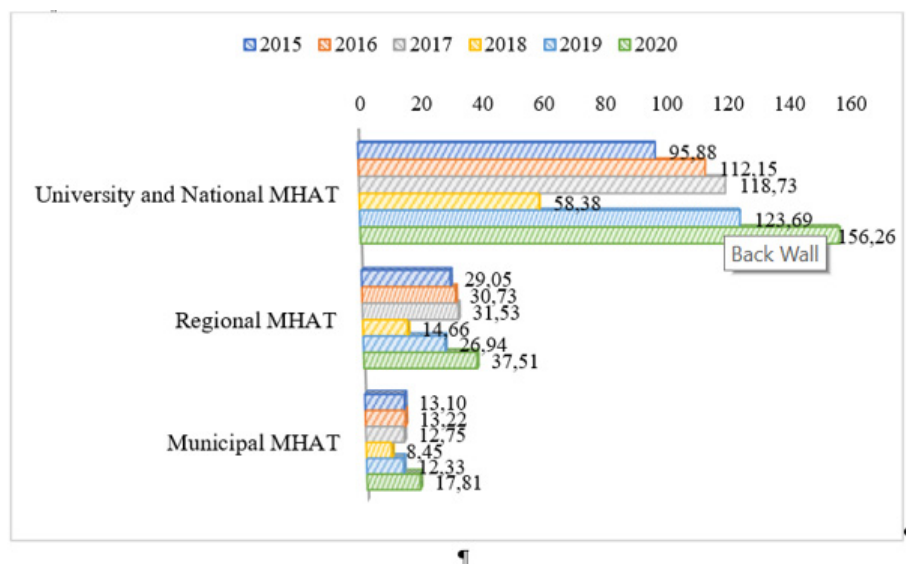


Fig. 5. Average cost per medication day (in BGN)

The situation is more special when the values of the average cost per medication day change. In 2018, there was a remarkable decline for all studied groups of MHAT, most pronounced in the Regional MHAT by 49.54 percent, compared to 2015. Next come UNMHAT - with a decrease of 39.11 percent and Municipal MHAT - with 35.5%. In general, for the period 2015-2019, there was an increase in the values of the average cost for one medication day only at the University and National MHAT - by 29.01 percent. We observe a drop of 7.26% in the Regional MHAT, and 5.88% in the Municipal MHAT. It is difficult to assess whether the reduction in the average cost of 1 medication day is able to meet the actual needs of individual patients, and hence individual clinics/departments, but the fact that patients often have to purchase medications and consumables clearly speaks for divergence of needs and financial possibilities. In the first year of the pandemic, the increase in this indicator was the highest with 44.44% at the Municipal MHAT, followed by the Regional MHAT - 39.24 percent and UNMHAT - with 26.33%.

CONCLUSIONS

From the obtained results and the analysis of the data, we can conclude that for the observed 5-year period before the COVID-19 pandemic, an increase is typical in the average values of all economic indicators for the activity of the University and national MHAT, as well as the Municipal MHAT - with the exception of the reduction for them in the value of one medicine day. At the Regional MHAT, there is a decrease in the values of the economic indicators "average cost per bed", "average cost per food-day" and "average cost per medicine day" and a slight increase in the values of the indicators "average cost per single received patient" and "average cost per bed-day".

In the first year of the pandemic, 2020, in contrast to the previous year - 2019, there was an increase in the value of all economic indicators for the activity in the group of multi-profile hospitals for active treatment, most pronounced in the indicator "average cost per passed sick".

The healthcare crisis caused by the pandemic raises many questions about the adequacy of the healthcare system in the country, its capacity, opportunities and problems. [7]

In response to the crisis, the government of the Republic of Bulgaria is increasing public spending on healthcare in 2020 by approximately BGN 628 million. [9]

RECOMMENDATIONS

Unlike other types of production of goods and services, the production of medical services cannot by definition be of low quality. Hospital comfort (non-medical hospital services) may differ from hospital to hospital, but the quality of medical services cannot fall below a certain standard.

In the conditions of a market economy, the researched data on the average value of one transferred patient can be used to establish average values at the national level - in general and by individual groups of medical facilities for hospital care, which can be used for cost planning, as well as for the search for

opportunities for compensatory additions to these values. Such compensation supplements could reflect precisely the presence of certain "individual" factors in each individual group of hospitals. [3,8]

Undoubtedly, the pandemic intensified the crisis in Bulgarian healthcare. Solving a problem, however, must be based on good planning beforehand. A higher degree of organization in the management of the pandemic would also solve the problem of transferring patients between hospitals and obtain the solution that is generally guaranteed by the legal order. These problems are not specific only to Bulgaria, but above all, the organization should be the rescue plan for getting out of this crisis. It is the state that has a leading role and its intervention is key for hospitals to be relieved.

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