

Original article



COMPARATIVE ANALYSIS OF THE RESOURCE ENDOWMENT OF THE ACTIVITY OF XXIIND DIAGNOSTICS AND CONSULTANCY CENTER AND XXIVTH DIAGNOSTICS AND CONSULTANCY CENTER IN SOFIA FOR THE PERIOD FROM THE YEAR 2016 TO 2018

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ABSTRACT

The main aim of the study is monitoring of the condition and developing of the resource opportunities of two diagnostics and consultancy centres (DCC) for the period from the year 2016 to 2018. The main method is comparative analysis of data for two healthcare institutions for specialized pre-hospital medical aid, which serve the population in different districts of Sofia for the period from the year 2016 to 2018. It was found - upon analysis of the personnel potential - that at XXIInd DCC the correlation between doctors/nurses is 1/0.25, which is below the frames of requirements of the modern standards for qualitative healthcare service of patients in that type of health care institutions and makes difficult the work of healthcare professionals. At XXIVth DCC - with a lower number of personnel - there was a higher relative share of administration as compared to XXIInd DCC. The correlation between doctors/nurses at XXIVth DCC was within the frames of requirements, which - along with other parameters - argues for a more effective management of resources and work. The management in both diagnostics and consultancy centres is directed towards administration of personnel, medical and subsidiary activities, ways of providing medical services and prices of provided medical aid.

Keywords: specialized pre-hospital medical aid, resources, management

INTRODUCTION

A main problem of healthcare on a global scale and in Bulgaria is the inconsistency between the limited financial resources and really increasing health expenses as a result of demographic changes, increasing needs, and continuous introduction of new, increasingly more expensive

diagnostic and therapeutic technologies. [1, 2, 3, 4]

AIM AND TASKS

The main aim is monitoring of the condition and developing of the resource opportunities of two diagnostics and consultancy centres (DCC) for the period from the year 2016 to 2018. Tasks - for analysis of the main activities and of the resource endowment of the two health care institutions - were assigned.

MATERIAL AND METHODS

Data from the official statistical reports of both healthcare institutions (HCI) and scientific literature on the subject were used. The main method is comparative analysis of the data for two healthcare institutions for specialized pre-hospital medical aid, which serve the population of different districts of Sofia for the period from the year 2016 to 2018.

RESULTS AND CONSIDERATION

The operative management of each of the two health care institutions (HCI) was performed by a manager, helped in his/her activity by a deputy manager and administration.

1. Main activities of XXIInd DCC and XXIVth DCC

"DCC XXIInd-Sofia" EOOD is a health care institution for specialized pre-hospital medical aid, which serves the population of "Slatina" and "Izgreve" districts, numbering 103 473 persons in regard to diagnostics, therapy, expert opinion on the temporary loss of work capacity, physical therapy and rehabilitation, prophylaxis and health promotion. 30 doctors of 17 different medical specialties (cardiology, pediatrics, obstetrics and gynecology, surgery, urology, otorhinolaryngology, ophthalmology, neurology, gastroen-

terology, orthopedics and traumatology, physical and rehabilitation medicine, endocrinology and metabolic diseases, dermatology, psychiatry, nephrology, radiology, clinical laboratory) work at “DCC XXIIInd-Sofia” EOOD. [5]

“DCC XXIVth-Sofia” EOOD is a health care institution for specialized pre-hospital medical aid, which serves the population of “Nadezhda” and “Vrabnitsa” districts, numbering 121 984 persons, as well as the inhabitants of the villages of Trebich, Mirovyane, Voluyak, and Mramor in regard to diagnostics, therapy, expert opinion on the temporary loss of work capacity, physical therapy and rehabilitation, prophylaxis and health promotion. 23 doctors of 17 different medical specialties (cardiology, pediatrics, obstetrics and gynecology, surgery, urology, otorhinolaryngology, ophthalmology, neurology, orthopedics and traumatology,

physical and rehabilitation medicine, endocrinology and metabolic diseases, pneumology and phthysiatry, dermatology, nephrology, medical imaging, psychiatry, clinical laboratory) work at “DCC XXIVth-Sofia” EOOD. [6]

Both healthcare institutions provide pre-hospital medical aid in 17 types of specialties for a population of districts with similar numbers (more than 100 000 persons).

2. Resources. Types.

2.1. Human resources

The personnel of “DCC XXII-nd-Sofia” EOOD numbers 64 persons, and the personnel of “DCC XXIVth-Sofia” EOOD numbers 48 persons. [5,6] The structure of personnel in the two medical centres is presented in the following table.

| | | XXIIInd DCC About February 1, 2016 | | XXIVth DCC About February 1, 2016 | |
|---|---|---------------------------------------|------------------------------|--------------------------------------|------------------------------|
| Serial No. | Positions | Number | Relative share in percentage | Number | Relative share in percentage |
| 1 | 2 | 3 | 4 | 5 | 6 |
| 1 | Manager | 1 | 1.6 | 1 | 2.08 |
| 2 | Head of Administrative Services | 1 | 1.6 | 1 | 2.08 |
| 3 | Doctors | 30 | 47.0 | 23 | 48.00 |
| 4 | Nurses | 6 | 9.3 | 3 | 6.25 |
| 5 | Medical Laboratory Assistants | 5 | 7.8 | 2 | 4.20 |
| 6 | Radiologic Laboratory Assistant | 2 | 3.1 | 2 | 4.20 |
| 7 | Rehabilitator | 3 | 4.7 | 1 | 2.08 |
| 8 | Kinesitherapist | 1 | 1,6 | 1 | 2.08 |
| 9 | Maternity nurses | 1 | 1.6 | 2 | 4.20 |
| 10 | Head of Book-Keeping Section | 1 | 1.6 | 1 | 2.08 |
| <i>Subsidiary and Servicing Personnel</i> | | | | | |
| 11 | Reception Room (Office workers at Information Desk) | 4 | 6.3 | 0 | 0 |
| 12 | Cashier | 1 | 1.6 | 1 | 2.08 |
| 13 | Stewart | 1 | 1.6 | 1 | 2.08 |
| 14 | Laborer | 1 | 1.6 | 0 | 0 |
| 15 | Sterilization | 1 | 1.6 | 0 | 0 |
| 16 | Hospital Attendants | 5 | 7.8 | 3 | 6.25 |
| 17 | Cashier (Reception Room) | 0 | 0 | 2 | 4.20 |
| 18 | Telephone Operator | 0 | 0 | 1 | 2.08 |
| 19 | Door-Keepers | 0 | 0 | 3 | 6.25 |
| Total | | 64 | 100 | 48 | 100 |

It was found - upon the analysis performed - that the highest relative share of the personnel at XXII-nd DCC had the doctors (47%), health professionals in nursing were 29%, followed by subsidiary personnel (17%), and administration (7%). At XXIV-th DCC the highest relative share belonged to doctors (48%), followed by administration (26%), health professionals in nursing (20%), and hygienists (6%). At XXIV-th DCC upon the lower number of per-

sonnel, there was a higher relative share of administration as compared to XXII-nd DCC.

It was found - upon analysis of the personnel potential at XXII-nd DCC - that the correlation between doctors/nurses was 1/0.25, which is below the frames of requirements of the modern standards for qualitative healthcare service of patients in that type of HCI and makes difficult the work of medical professionals. The correlation between

doctors/nurses at XXIV-th DCC was 1/0.55, which is within the frames of requirements of modern standards for qualitative health services of patients in that type of HCI.

The total number of administrative personnel at XXII-nd DCC is five persons, which is 7% of the total personnel, while at XXIV-th DCC it is 10 persons, which is 26% of the total personnel. The performed study found that in both healthcare institutions it was within the necessary limits for performing of successful managing policy both along the horizontal line and vertical line.

2.2. Material Resources

“DCC XXII-nd-Sofia” EOOD has at its disposal specialized offices, as well as offices of general practitioners (of which 21 individual practices and two group practices, as well as 18 dental practices). “DCC XXIV-th-Sofia” EOOD also has at its disposal specialized offices, as well as offices of general practitioners (of which 34 individual practices and 9 dental practices). Both healthcare institutions have simultaneously at their disposal specialized offices,

offices of general practitioners and diagnostic units (radiologic, clinical laboratory, and functional unit). That significantly eases the relations of medical professionals with general practitioners, and the access of patients to diagnostic units.

Both healthcare institutions are in possession of material fixed assets (MFA) of similar value under review, but with different distribution. “DCC XXIIInd-Sofia” EOOD owns MFA with a value under review of 1 777 thousand levs, including: lands - 1 225 thousand levs; buildings - 552 thousand levs; machines - 64 thousand levs. “DCC XXIVth-Sofia” EOOD owns MFA with a value under review of 1 139 thousand levs, including: lands and buildings - 949 thousand levs; equipment- 40 thousand levs; machines - 150 thousand levs. Most considerable is the difference in the value of machines, which is more than twice higher in favour of XXIVth DCC. [5,6]

The following medical apparatuses are present at the healthcare institutions:

| Medical apparatuses | Number XXIIInd DCC | Number XXIVth DCC |
|--|-----------------------|----------------------|
| Echograph | 2 | 2 |
| Electrocardiographic apparatus | 4 | 4 |
| Spirometer | 0 | 1 |
| Mammograph | 0 | 1 |
| Electroencephalograph | 0 | 1 |
| X-ray apparatus | 1 | 1 |
| Hematological analyzer | 2 | 1 |
| Automatic clinical and chemical analyzer | 1 | 1 |
| Cardiomonitor | 0 | 1 |
| Defibrillator | 1 | 1 |
| Coagulation laser | 0 | 1 |
| Laser apparatus for biostimulation | 0 | 1 |
| Ultrasound therapeutic apparatus | 3 | 1 |
| Apparatus for high-frequency currents | 5 | 3 |
| Telegammatherapeutic systems | 0 | 2 |
| ELIZA and reanalyzer of hormones | 1 | 0 |
| Endoscope | 1 | 0 |
| Apparatus for high-frequency currents | 5 | 0 |
| Electromyograph | 1 | 0 |

In both healthcare institutions, the primary assessment - upon acquiring of material fixed assets - is performed based on a price of acquiring and all direct expenses, related to the setting of the active in condition for usage. The chosen threshold of the essence for material fixed assets of those diagnostics and consultancy centres is 700 levs. Upon the yearly amortizations, material fixed assets are obligatorily tested for depreciation - a linear method of amortization is used, which is applied yearly, about the date of the annual financial account. For each amortizable asset or group asset, an amortizable plan is developed, and after that, a summarized amortization plan is prepared for

the period of report of all amortizable material fixed assets. [7,8]

It is apparent from the analysis performed by all material resources of both DCCs that they have at their disposal the necessary equipment for performing of that activity. The latter, as well as the good personnel completion, leads to early, fast, and competent disclosing of a higher number of diseases with a confirmed diagnosis.

2.3. Financial Resources. Here are presented only some aspects of the financial resources of the two associations.

2.3.1. Review of the results of the activity of XXIIInd DCC

Data from the official statistics of “DCC XXIIth-Sofia” EOOD for the period from the year 2011 to 2015 were used for the analysis of resources for the formation of in-

comes, and also of expenses. The main financial flows towards “DCC XXIIInd-Sofia” EOOD at present were the base for financing from the following resources:

| Years | 2011 | 2012 | 2013 | 2014 | 2015 |
|--------------------------------|-------|-------|-------|-------|-------|
| Incomes (thousand levs) | | | | | |
| Total | 1 372 | 1 370 | 1 355 | 1 489 | 1 340 |
| Medical services | 1 294 | 1 365 | 1 295 | 1 361 | 1 332 |
| % | 85 | 99.7 | 96 | 99.4 | 91 |
| Other incomes | 63 | 5 | 58 | 128 | 8 |
| % | 5 | 0.3 | 4 | 0.6 | 9 |

The tendency of the incomes indicates relative stability of the receipts from the National Health Insurance Fund (NHIF) and private sector as a percentage of all incomes.

The expenses of DCC are distributed by the main items for the sustenance of the activity. The main expense item for the sustenance of DCC is the remunerations, amounting to 61-63% of the total expenses for the period of follow-up, followed by expenses for insurances, varying between the interval of 10 and 11.5%, and for raw materials and other materials - between 5 and 12%.

It is apparent - from that analysis - that the main re-

sources as expenses are directed mostly towards the realization of the main activity of “DCC XXIIInd-Sofia” EOOD.

The tendency for the future is the stability of those expenses. On the other hand, the expenses for amortizations through the years show an increase, but that is the natural tendency for renovation and sustenance of the medical equipment in an elective order.

2.3.2. Review of the results of the activity of XXIIInd DCC and XXIVth DCC

The main financial flows to “DCC XXIVth-Sofia” EOOD for the period from the year 2011 to 2015 are the base for the financing of the following resources:

| Years | 2011 | 2012 | 2013 | 2014 | 2015 |
|--------------------------------|------|------|------|------|------|
| Incomes (thousand levs) | | | | | |
| Total | 733 | 746 | 684 | 698 | 728 |
| Medical services | 649 | 655 | 581 | 606 | 638 |
| % | 89 | 88 | 85 | 87 | 88 |
| Other incomes | 84 | 90 | 103 | 92 | 90 |
| % | 11 | 12 | 15 | 13 | 12 |

The tendency of incomes shows relative stability of the receipts from NHIF and private sector as a percentage of all incomes.

The expenses of DCC are distributed by the main items for the sustenance of the activity. The main item of expense for the sustenance of DCC is the remunerations, amounting to 58-61% of the general expenses for the period of follow-up, followed by expenses for external services, varying between 15.5 and 17%, and for insurances - between 11 and 12%.

The tendency in future is the stability of those expenses. On the other hand, the expenses for amortizations through the years show an increase, but that is the natural tendency for renovation and exchange of the medical equipment in an elective order. It is apparent from that analysis that the main means as expenses are directed mostly towards the realization of the main activity of “DCC XXIVth-Sofia” EOOD. [9]

2.3.3. Analysis of critical point

Those engaged in the management of the association use that method for analysis of the expenses, while the critical point shows at what number of rendered medical serv-

ices the realized incomes cover the performed expenses, and the financial result is a zero value.

The level of the critical point may be calculated in every concrete situation based on the fact that the critical point is a correlation between the permanent expenses, on the one hand, and the difference between a unit of service and the average expense, on the other. The tendency for the preservation of the rentability of the own capital is a positive value, and it shows certain rates of capital return. [8,10]

The own capital of “DCC XXIIInd-Sofia” EOOD completely covers the liabilities. After the year 2011, the coefficient of financial autonomy shows the permanent establishment of the financial independence of the association.

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CONCLUSIONS

At both healthcare institutions, the administrative personnel is within the necessary limits for performing of

successful managing policy both along the horizontal line and the vertical line.

It is apparent - at both DCCs - that there is a good completion of personnel, and that they have at their disposal the necessary equipment for performing the activity.

It was found - upon analysis of the potential of personnel - that at XXIIInd DCC the correlation between doctors/nurses is below the frames of requirements of the contemporary standards for qualitative health service of patients in that type of HCI, and it makes difficult the work of the healthcare professionals.

The correlation between doctors/nurses at XXIVth DCC is within the requirements, which, as well as other parameters, argues for more effective management of the resources and of the work.

FINAL STATEMENT

The management in both diagnostics and consultancy centres is directed towards administration of personnel, medical and subsidiary activities, ways of rendering medical services, and prices for the performed medical service. While reviewing of the sources for the formation of incomes, attention must be turned to the matter for real valuing and formation of objective basic price for clinical examination, highly specialized medical activity, medical and diagnostic examination and highly specialized medical and diagnostic examination as a part of pre-hospital medical aid. In both health care institutions, there are present possibilities for early, fast, and competent finding, and therapy of a number of diseases with a confirmed diagnosis.

REFERENCES:

1. Borisov V. Health Care Management. *Sofia: GorexPress*. 2003 [in Bulgarian]
2. Ministry of Health. Annual report on the condition of citizens and the implementation of the 2013 National Health Strategy. [in Bulgarian] Published in 2014. [[Internet](#)]
3. National Center for Public Health and Analyses. Population morbidity rate; Population condition and mobility. *Sofia*. Published in 2015. [[Internet](#)].
4. National Institute of Statistics. Demographic and Social Statistics. *Sofia*. 2013 [[Internet](#)]
5. Book-keeping, statistical, and account information, provided by the "DCC XXIIInd-Sofia" EOOD [in Bulgarian]
6. Book-keeping, statistical, and account information, provided by the "DCC XXIVth-Sofia" EOOD [in Bulgarian]
7. Borisov V. Finances, University of National and World Economy. *Sofia: Superprint Ltd*. 2003 [in Bulgarian]
8. Gladilov S., Delcheva Ev. Economy of Health Care. *Sofia: Priniceps*. 2003 [in Bulgarian]
9. Yotova L., Penkova Ev. Economy of the Prosperity, UNWE. *Sofia: Superprint Ltd*. 2003 [in Bulgarian]
10. Mirchev M. Bases of Administration, UNWE. *Sofia: Superprint Ltd*. 2004 [in Bulgarian]

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