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DISPARITIES OF THE MEDICAL-SANITARY INFRASTRUCTURE IN THE NORTH-WEST DEVELOPMENT REGION

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ABSTRACT - The present study proposes a systemic analysis which will determine the structure of inequalities, medical-sanitary disparities in the North-West Development Region. The methodological focus of our study falls on the medical-sanitary resources with a higher interest on the medical-sanitary infrastructure of this regional space. In order to highlight the "map" of the medical-sanitary disparities in the North-West Development Region we have operated an inventory of medical-sanitary resources and a demographical-based evaluation, thus coming to an outcome of a quantity-quality complex analysis.

Keywords: medical-sanitary disparities, medical system, medical-sanitary resources, medical-sanitary infrastructure, health condition, medical polarization.

1. GENERAL CONSIDERATIONS

The quality of human resources from a territorial system becomes, within the frame of the global informational society and knowledge-based economy, one of the most important elements on which the development management can and must apply changing and improvement vectors.

The health of the human resources is therefore one of its most vital components, thus granting to the medical-sanitary resources and to the medical system a major importance as the existence, the degree of specializing and adequacy to the problems of the territorial system can represent a key factor for implementing the management of change and strategic administration of the respective system.

With this in mind, our intercession stands within the health areal and life quality having as main purpose to identify and analyze the medical-sanitary disparities and to determine their impact in the territory and in the health condition of the North-West Development Region population.

In order to surpass the common sense concerning disparities in general and medical-sanitary disparities in particular, we have engaged in a methodological effort to statistically highlight the real amplitude of the medical-sanitary disparities. The expression "regional disparities" is currently used to show the existence of inequalities concerning the inter-regional well-being and economic development. The Romanian Explicative Dictionary, 1998 edition, defines "disparity" – as being a lack of linkage, harmony, and coincidence between elements; according to the Encyclopedic Dictionary, 2005 edition, the notion of "disparate" signifies the existence of a reality aspect unrelated to things from the same category. Disparities are always evaluated in relation to a system of reference. They represent a deviation from a standard.

The current study uses the "medical-sanitary" disparities to give evidence of the existence of inequalities concerning the medical-sanitary resources in the North-West development region.

2. INVENTORYING AND EVALUATING MEDICAL-SANITARY RESOURCES

In order to determine the structure of the medical disparities in the North-West development region we have proceeded to inventorying the medical-sanitary resources from every county of the region by using a unitary categorical structure which will include the most important types of medical-sanitary units. To highlight the medical-sanitary resources of this region, 14 quantitative factors of the

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medical-sanitary infrastructure have been taken into consideration: the number of hospitals, policlinics, medical dispensaries, health centers, tuberculosis sanatoriums, dental cabinets, medical laboratories, dental technique laboratories, pharmacies and pharmaceutical stores, specialized ambulatories, general medicine cabinets, medical cabinets for schools and universities, nurseries.

The inventorying was realized by using the official statistic data gathered by consulting the statistic publications issued by the National Statistics Institute in 2005.

Table 1. *Inventorying types of medical-sanitary units in the North-West Region, 2005.*

Types of units	Bihor	Bistrița-Năsăud	Cluj	Maramureş	Satu Mare	Sălaj
Hospitals	15	3	23	9	5	6
Policlinics	7	2	7	-	-	-
Medical dispensaries	5	2	6	5	4	10
Health centers	3	1	3	2	1	-
TBC sanatoriums	-	-	1	1	-	-
Dental cabinets	305	104	454	215	118	63
Medical laboratories	10	3	21	16	11	5
Dental technique laboratories	78	45	138	50	38	19
Pharmacies and pharmaceutical stores	188	88	220	97	79	55
Specialized ambulatories	17	3	21	10	5	6
Medical centers	24	-	6	-	-	3
General medicine cabinets	15	21	47	20	15	7
Medical cabinets for schools and universities	22	22	43	13	15	6
Nurseries	14	4	16	8	8	1

The effort to “draw a map” of the medical-sanitary disparities of this region claims that the primary statistic data resulted from inventorying to be evaluated in relation to the demographic factor thus realizing a complex analysis that will equilibrate the strictly quantitative approach and apply the statistic data to population numbers. In order to explain the degree of adequacy and exercise of the medical function of county medical systems, we have realized a methodological pattern of quantification of medical resources (both human and technical-sanitary) by trying a “quantitative-qualitative approach” and confronting existent resources to the total population of the respective county.

The methodological system of medical-sanitary resource quantification that we used followed a number of determination phases:

a) we have identified the structure of the most important medical establishments by taking into account a number of 14 types of medical-sanitary units which we have transformed into 14 standard quantitative indicators;

b) we have applied this typological evaluation grid to each county in the North-Western region and counted the number of medical-sanitary units in every county in order to properly evaluate and compare the quantity of medical-sanitary resources;

c) we have confronted the number of medical-sanitary units to the total population in each county in order to have a qualitative evaluation, not just a strictly quantitative one;

d) we have realized a qualitative approach scale in report to the importance socially attributed to each type of medical-sanitary unit, after that, we gave a number of points for every indicator in the standard evaluation grid and then we realized a sum of the values of the indicators for each county;

e) consequent to the quantification and using the realized scale, each county was assigned a number of points depending on which they were set in order on a hierarchic scale;

f) based on this hierarchic scale a cartographic report was laid down and then we realized the quantitative-qualitative interpretation of the medical-sanitary resource situation in each county.

Our methodological innovation effort resulted in a quantification that we tried to standardize under a ***medical-sanitary infrastructure index***: ***M.S.I.I.***

The quantification system based on points awarded for each type of medical-sanitary unit related to the number of inhabitants from each county in the North-West Region was realized as follows: we set up a maximum total of 90 points out of which depending on importance and real utility for the medical system, hospital units got 20p; policlinics 10p; medical dispensaries 5p; health centers 3p; TBC sanatoriums 2p; dental cabinets 10p; medical laboratories 8p; dental technique laboratories 3p; pharmacies and pharmaceutical stores 5p; specialized ambulatories 2p; medical centers 2p; general medicine cabinets 8p; medical cabinets for schools and universities 6p; nurseries 6p. Therefore, the maximum attainable draft is 90. As an outcome of quantification each county was awarded a number of points, depending on which they were set up on a hierarchic scale. Only the 2005 data for the North-Western Region counties was taken into consideration.

Table 2. *The medical-sanitary resource quantification methodological pattern.*

Medical-Sanitary Units for 100,000 inhabitants	**Number of points awarded**
1. No. of hospitals for 100,000 inhabitants	a) < 1.1 hospitals for 100,000 inhabitants =5 p
	b) between 1.2 – 2.1 = 10 p
	c) between 2.2 – 2.9 = 15 p
	d) > than 2.9 hospitals for 100,000 inhabitants = 20 p
2. No. of policlinics for 100,000 inhabitants	a) < than 1 policlinic for 100,000 inhabitants = 2 p
	b) between 1.1 – 1,9 = 5 p
	c) between 2.2 – 3,0 = 8 p
	d) > 3.1 policlinics for 100,000 inhabitants = 10 p
3. Medical dispensaries for 100,000 inhabitants	a) < 1 dispensary for 100,000 inhabitants = 1 p
	b) between 1.1 – 1.9 = 2 p
	c) between 2.0 – 3.9 = 4 p
	d) > 4 dispensaries for 100,000 inhabitants = 5 p
4. Health centers for 100,000 inhabitants	a) < 0.2 health centers for 100,000 inhabitants = 0.5 p
	b) between 0.21 – 0.3 = 1 p
	c) between 0.31 – 0.4 = 2 p
	d) > 0.4 = 3 p
5. TBC sanatoriums for 100,000 inhabitants	a) < 0.1 TBC sanatoriums for 100,000 inhabitants = 0.5 p
	b) between 0.1 – 0.2 = 1 p

	c) > 0.2 TBC sanatoriums for 100,000 inhabitants = 2 p
6. Dental cabinets for 100,000 inhabitants	a) < 2.0 dental cabinets for 100,000 inhabitants =2 p
	b) between 2.1 – 4.1 = 5 p
	c) between 4.2 – 6.0 = 8 p
	d) > 6.1 = 10 p
7. Medical laboratories for 100,000 inhabitants	a) < 1.0 = 2 p
	b) between 1.1 – 1.9 = 4 p
	c) between 2.0 – 2.9 = 6 p
	d) > 3.0 medical laboratories for 100,000 inhabitants = 8 p
8. Dental technique laboratories for 100,000 inhabitants	a) < 1 dental technique laboratories = 1 p
	b) between 1.1 -2.0 = 2 p
	c) > 2.1 = 3 p
9. Pharmacies and pharmaceutical stores for 100,000 inhabitants	a) < 1 pharmacies and pharmaceutical stores for 100,000 inhabitants = 1 p
	b) between 1.1- 1.9 = 2 p
	c) between 2.0 – 2.9 = 4 p
	d) > 2.9 = 5 p
10. Specialized ambulatories for 100,000 inhabitants	a) < 1 specialized ambulatory for 100,000 inhabitants = 0.5 p
	b) between 1.0- 2.1 = 1 p
	c) > 2.1 = 2 p
11. Medical centers for 100,000 inhabitants	a)< 1 medical center for 100,000 inhabitants = 1 p
	b) > 1.1 = 2 p
12. General medicine cabinets for 100,000 inhabitants	a) < 2 general med. Cabinets for 100,000 inhabitants =2 p
	b) between 2.1 – 3.9 = 4 p
	c) between 4.0 – 6 = 6 p
	d) > 6.1 = 8 p
13. Medical cabinets for schools and universities 100,000 inhabitants	a) < 2.1 medical cabinets for schools and universities for 100,000 inhabitants = 2 p
	b) between 2.1 – 4.1 = 4 p
	c) > 4.1 = 6 p
14. Nurseries for 100,000 inhabitants	a) < 1 nursery for 100,000 inhabitants = 1 p
	b) between 1.1- 1.9 = 3 p
	c) > 1.9 = 6 p

The methodological model of medical resource quantification has been applied to the studied regional area (the North-West Development Region), allowing us to obtain a numerical representation as a medical-sanitary infrastructure index.

Table 3. *The 2005 Medical-Sanitary Infrastructure Indices (M.S.I.I.) in the North-West Region counties*

Types of Units	Bihor	Bistrița-Năsăud	Cluj	Maramureş	Satu Mare	Sălaj
Hospitals	20	5	20	10	5	10
Policlinics	5	5	5	8	5	-
Medical Dispensaries	2	2	2	2	2	5
Health Centers	3	2	3	2	2	-

TBC Sanatoriums	-	-	1	1	-	-
Dental Cabinets	8	5	10	5	5	5
Medical Laboratories	6	4	8	8	8	6
Dental Techniques Laboratories	2	2	3	2	2	2
Pharmacies and Pharmaceutical Stores	5	5	5	4	4	4
Specialized ambulatories	2	1	2	1	1	1
Medical Centers	2	-	2	-	-	2
General Medicine Cabinets	3	8	8	6	6	4
Medical Cabinets for Schools and Universities	4	6	6	4	4	2
Nurseries	6	3	6	6	6	1
Total points	**68**	**48**	**81**	**59**	**50**	**42**

Starting from the values of the ***Medical-Sanitary Infrastructure Indices (M.S.I.I.)*** attained by applying the quantification system, we have realized a graphical representation which quantitatively-qualitatively highlights the medical-sanitary infrastructure resources from the North-West Development Region and their distribution in the territory, thus drawing a real "map" of the medical-sanitary resources and implicitly a stressing of the medical-sanitary infrastructure disparities in the North-West Region.

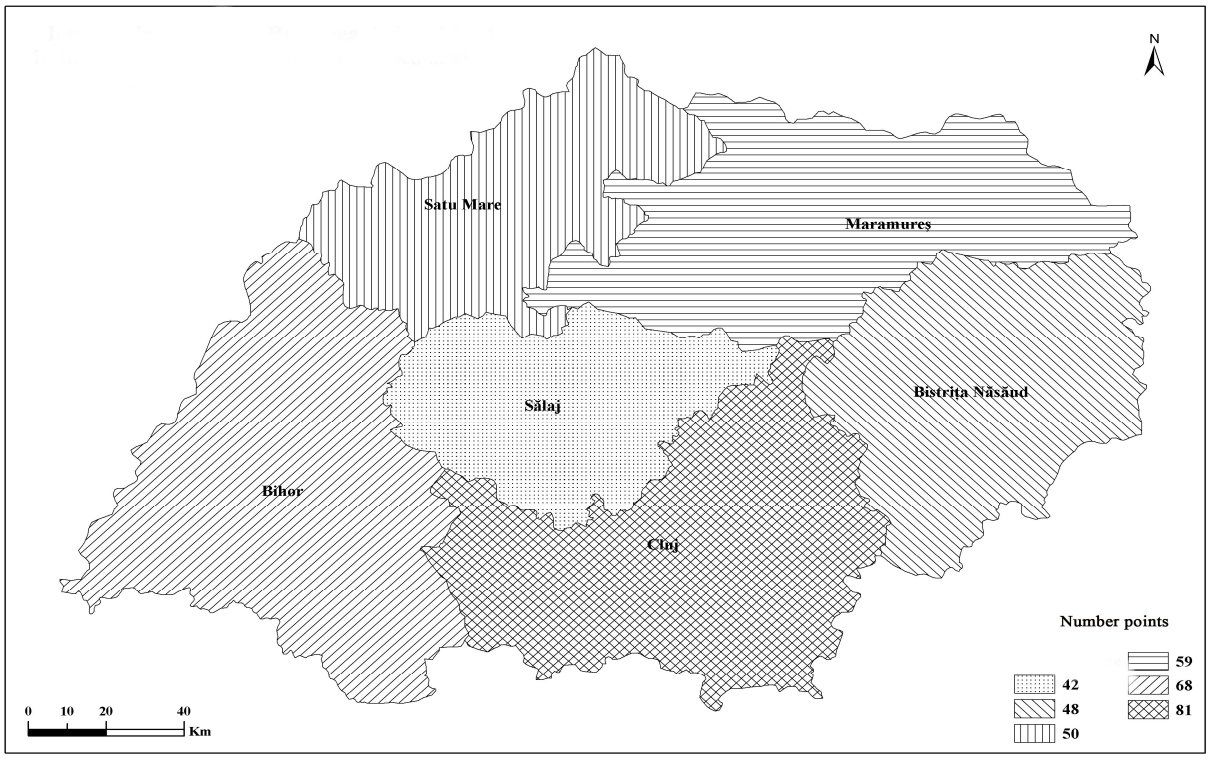

Figure 1. *Disparities of the medical-sanitary infrastructure in the North-West Development Region.*

3. THE IMPACT OF MEDICAL-SANITARY DISPARITIES

The inventory, evaluation, quantification and analysis of the graphical representation of the medical-sanitary infrastructure disparities in the North-West Development Region highlights the immediate impact on the quality of the medical-sanitary resources withheld by the regional medical system in order to maintain, administer and improve the population's actual health condition.

The Medical-Sanitary Infrastructure Index represents the actual state of the medical-sanitary infrastructure resources. In the same time it emphasizes the regional medical system's capacity to intervene, on a spatial level, over the aerials that are deficient in medical-sanitary resources and to allow a permanent strategic and operational management.

The quality and quantity of the medical-sanitary resources is materialized in medical services which, as result of the analysis, reflect the degree of functioning of the medical-sanitary system. The organization of medical services at national and at development regions' level is accomplished on three levels:

a.) **Primary medical assistance** includes: medical cabinets for individual, agglomerate or associated family medicine, territorial dispensaries, school or work related dispensaries, dental cabinets, pharmacies, and rescue stations.

b.) **Specialized ambulatory assistance** includes: hospitals, diagnosis and treatment centers, specialized centers, policlinics, TBC dispensaries, etc

c.) **On-bed medical assistance** includes: University clinical hospitals, county hospitals, urban or rural territorial hospitals and other medical or socio-medical units and on-bed health centers. The last are distributed within the territory according to the beneficiary population number.

The structure of the medical-sanitary disparities highlights the existence of problems we should consider looking into and seeing to their changing in order for the degree of functionality of the regional medical system to grow and to improve the quality of the medical function over the territorial system represented by the North-West Development Region. The inter-regional problems are the following:

For the **primary assistance units**:

- The low medical-sanitary staff number at this level in many rural areas;
- Inadequate urban condition and insufficient technical-material endowment for family medical cabinets and dental cabinets;
- Insufficient medical staff number for medical cabinets in counties such as Maramureş, Satu Mare and Sălaj;
- The maximum number of patients for a surgeon dentist is 3,000 persons in the urban area as compared to 18-20 thousands in the rural area.

For the **specialized ambulatory units**:

- Insufficient number of beds in the TBC sanatoriums and preventoria;
- The existence of specialty or high performance centers in only two cities: Cluj-Napoca and Oradea.

For the **on-bed medical assistance units**:

- Low numbers of beds in the following counties: Bistriţa-Năsăud, Satu Mare and Sălaj (below the country's and the region's average);
- Insufficient medical staff for both the rural and urban territorial hospitals from Maramureş, Satu Mare and Sălaj, prevailing in the rural areas.

Each county in the North-West Development Region has a county hospital with complex medical services, territorial hospitals with wide special services and on-bed sanitary units specialized in particular medical fields. However, high performance or specialized hospitals are only present in the two university towns: Cluj-Napoca and Oradea, which settles into shape a polarization around these

two cities. A hierarchy would look like this: Cluj-Napoca, as the main medical pole (1st rank medical center) over the entire development region, then Oradea and Baia Mare – 2nd rank medical centers (out of which Oradea qualifies for an inter-county superior medical education); 3rd rank county hospital units – the cities of Satu Mare, Bistrița and Zalău, and four local rank hospitals from Sighetu-Marmației, Borşa, Salonta and Turda.

The economic factors during the transition period gave birth to both surviving problems for some medical establishments, as well as a social layering materialized in medical migration towards more important medical centers and better-known medical personalities. These economic problems led to the restructuring of sections or hospitals, the number of beds were reduced in territorial hospitals, which automatically led to the growth of demand for the more important centers and a congestion of university and county hospitals, thus encouraging polarization and medical-sanitary disparities.

The medical system and the use of medical resources can improve but not fix the health condition in a regional space. The explanation is a more complex one and it involves a series of determining factors among which are found the population's education level (with the main focus on education for a better, healthier life), the physical and cultural environment condition and more important, the socio-economic context where the respective regional medical system operates and is organized.

CONCLUSIONS

Our study has identified and analyzed the medical-sanitary disparities in the North-West Region and has emphasized their impact in the territory and over the population's health condition. The conclusion we can draw here is that disparities must not be ignored, but controlled, salvaged and permanently administered as they set off the "polarizations", the true engines of development of a territorial core which, thus, make the most of their authenticity.

The above presentation must not be considered a laying out plan, but we do take the liberty of drawing several coherent and convergent optimization measures:

- Urgent modernization of local infrastructure (local, town and communal hospitals) with the help of state funds and budget as well as European funds. These locations will be meant to grant doctors with a proper environment to live in and work under favorable conditions in order to administer primary and prophylactic treatment.
- The introduction of health education courses in the regional or national curricular area (school curriculum – S.C., local development curriculum – L.D.C.)
- The road-binding of remote areas with regional resource centers (regional hospital, medical campus, research centers, recovery centers, pharmaceutical resources, etc) towards which the region population can gain very fast access in cases of medical emergencies;
- The resizing of the county medical-sanitary network (for primary treatment the local, communal or town infrastructure is sufficient, but for more serious problems the county infrastructure is, as it is, insufficient). This resizing would transform the communist-built medical system into a much more flexible and efficient European system;
- Ensuring a sufficient number of medium staff in each family medicine cabinet;
- The privatization or gaining autonomy for sanitary units (specialized ambulatories, diagnosis and treatment centers, medical cabinets) in order to gain financial and medical efficiency;
- The encouraging of development for the private medical sector through fiscal (tax exemption, private medical insurances, etc.) or financial (state awarded credits, European programs co-financing) policies.

We strongly believe that the European Union's solution concerning the regional development policies through institutions and project aimed development funds, represent a pattern for success in valorizing disparities and also control and manage their dynamics.

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