

INEQUALITIES IN THE ACCESS TO MEDICAL DIAGNOSTIC SERVICES IN OUTPATIENT MEDICAL PRACTICE IN NORTHEASTERN BULGARIA

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ABSTRACT

INTRODUCTION: Territorial inequality in healthcare services is an important problem worldwide. A complete study of the correlation between the inequalities and the territorial disproportion of health services is required, as this will ensure a scientifically based model for improvement of the access to health services. The aim of the current work is to analyze the patients' satisfaction with the territorial distribution of medical diagnostic services and to prepare a cartogram of the observed differences in the Northeastern region of Bulgaria.

MATERIALS AND METHODS: Between July and September, 2015 we studied 502 patients from 30 municipalities situated in Northeastern Bulgaria about their opinion for the number of accessible medical diagnostic laboratories. We also drew a visual presentation of the spatial distribution of medical diagnostic laboratories in the region.

RESULTS: Laboratories in Northeastern Bulgaria are unequally distributed and mainly concentrated in the regional centers and larger towns. Accordingly, most of the patients living up to 3 km from a medical diagnostic laboratory were satisfied from the number of available labs, while people living 3-10 km apart thought that laboratories were not enough.

CONCLUSION: The main reason for health inequalities in Bulgaria is the territorial imbalance between health care units. The increased need of health care and social assistance requires new resources to provide laboratory services via mobile lab offices and home visits. A better infrastructure of the outpatient health care in Northeastern Bulgaria and new players in the lab service market will assure equal access and favorable concurrent environment.

Keywords: *health inequalities, health-care access, medical diagnostic service*

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INTRODUCTION

Health inequality exists in all European countries, and in a significant part of them its burden has increased for the last few decades (1). The aspects of health equality have been discussed for years from different experts in health economics. According to some authors (2–4), health equality means the same access for all people to medical care, while others emphasize the necessity to consider the real use of

health services (5). The inequality in access to healthcare services between different regions (urban and rural) and between age groups can easily be visualized via cartograms (6).

In Bulgaria the territorial distribution of medical practices and laboratories is irregular and some regions in the country have insufficient healthcare and laboratory units (7). The imbalanced sharing of healthcare services in rural and urban regions determines the major inequality in healthcare access in the country.

The aim of the current work is to analyze the patients' satisfaction with the territorial distribution of medical diagnostic services and to prepare a cartogram of the observed differences in the laboratory availability in different regions of Bulgaria, and especially in its Northeastern part.

MATERIALS AND METHODS

Between July and September, 2015 we studied the opinion of 502 patients from 30 municipalities situated in regions of Varna, Dobrich, and Shumen in Northeastern Bulgaria. The responders were of different gender and age (over 18 years), selected randomly and contacted immediately after a visit to a medical diagnostic laboratory or general practitioner (GP). This type of contact was chosen in order to receive a patient's immediate impression of the ac-

tivities of the medical diagnostic laboratory and to obtain the maximum possible credible answers. We used a short questionnaire which included descriptive demographic characteristics of responders (age, sex, place of residence) and questions about distance to the nearest laboratory; satisfaction of laboratory availability and services; and how the laboratory had been chosen.

The number of registered medical diagnostic laboratories was obtained from the public registries of the Regional Health Inspectorates in all 28 regions of Bulgaria. Both numbers of head laboratory offices and of their manipulation centers were considered.

IBM SPSS Statistics version 19 (Statistical Package for Social Science) was used to process the data for quantitative analysis. The statistical differences of the indicators were evaluated with a critical significance level of $p < 0.05$. We applied correlation analysis to determine the strength of existing relationships and Pearson's chi-squared test to test the null hypothesis.

RESULTS

Bulgarian patients have the possibility to choose the medical diagnostic laboratory for their tests but the territorial access to lab services is an important issue in remote areas. Figure 1 presents the actual differences in territorial distribution of laboratories

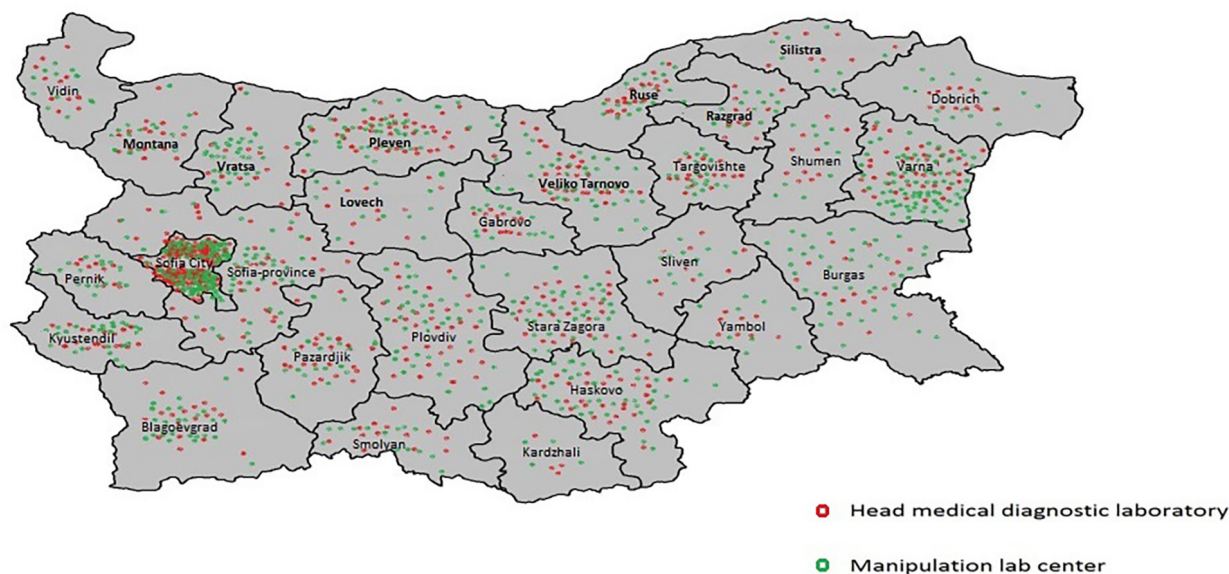


Fig. 1. Cartogram of outpatient medical laboratories in Bulgaria

in Bulgaria: most of the laboratories are concentrated in the capital and in the main largest cities of the country, while in distant areas even manipulation lab centers are missing.

Out of 502 patients enrolled in our survey, 75.2% were from region Varna, 13% - from region Dobrich and 11.8% - from region Shumen. The proportion of residents living in the regional centers (Varna, Dobrich and Shumen) was 64% (322 out of 502 patients) versus 36% (180 out of 502) living in the small towns and villages in the regions of interest. The mean age of the sample was 51.1 years with range from 18 to 90 years. Women were 56.3% and men – 43.7%.

Most of the patients in the sample (53%) were living up to 3 km from the chosen laboratory (Fig. 2), but significant part (almost 25%) of responders performed their laboratory tests in laboratories situated more than 10 km away from their place of residence.

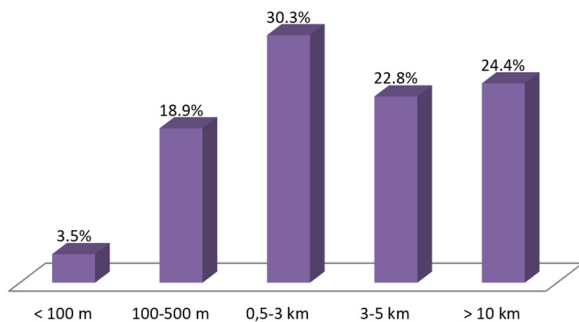


Fig. 2. Distribution of patients according to distance between the chosen medical diagnostic laboratory and their place of residence

When we study the satisfaction of laboratory allocation among patients in Northeastern Bulgaria, the dispersion analysis showed a clear correlation between the distance to the nearest lab and the patient's satisfaction of lab services ($F=134.229$; $p<0.05$), and the strength of this correlation was significant ($r=0.592$; $p<0.05$). Most of the patients living up to 3 km from a medical diagnostic laboratory were satisfied by the number of available laboratories, while people living 3-10 km away thought that there weren't enough laboratories.

A statistically significant difference was found between patient's satisfaction from the number of laboratories and their place of residence ($\chi^2=68.967$;

$p<0.05$). Respondents living in smaller towns and villages criticized the number of accessible medical diagnostic laboratories, while people in the main towns of the studied regions appreciated the number of available laboratories. The correlation is significant and positive ($r= 0.524$; $p<0.01$).

Despite the listed results, the proximity of the laboratory does not seem to be an important factor for the patient's choice. Nobody from the responders declared the distance to the laboratory to be significant for their preference (Fig. 3). Most of the patients have chosen the laboratory for their tests because of their personal satisfaction from the offered services in the past, others – after recommendation of friend, GP or medical specialist.

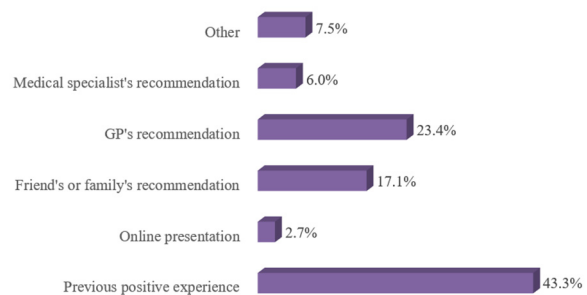


Fig. 3. Distribution of patients according to the reason to choose the corresponding medical diagnostic laboratory

The major problem in Northeastern Bulgaria is the misbalanced distribution of laboratory practices, as well as their concentration in the regional centers and larger towns (Fig. 4). Ten medical diagnostic laboratories and ten manipulation centers are registered in the region of Shumen, seven of each category are situated in the main municipality of the region. The population in the remaining nine municipalities is served by three independent medical diagnostic labs and three manipulation centers (Fig. 4A). Similar situation is observed in the region of Dobrich, where eight of the 13 registered medical diagnostic laboratories and nine of the 16 manipulation centers are concentrated in the main municipality – Dobrich town (Fig. 4B). The problem is most apparent in the region of Varna with more than 90% of all laboratories and manipulation centers located in the city of Varna (Fig. 4C).

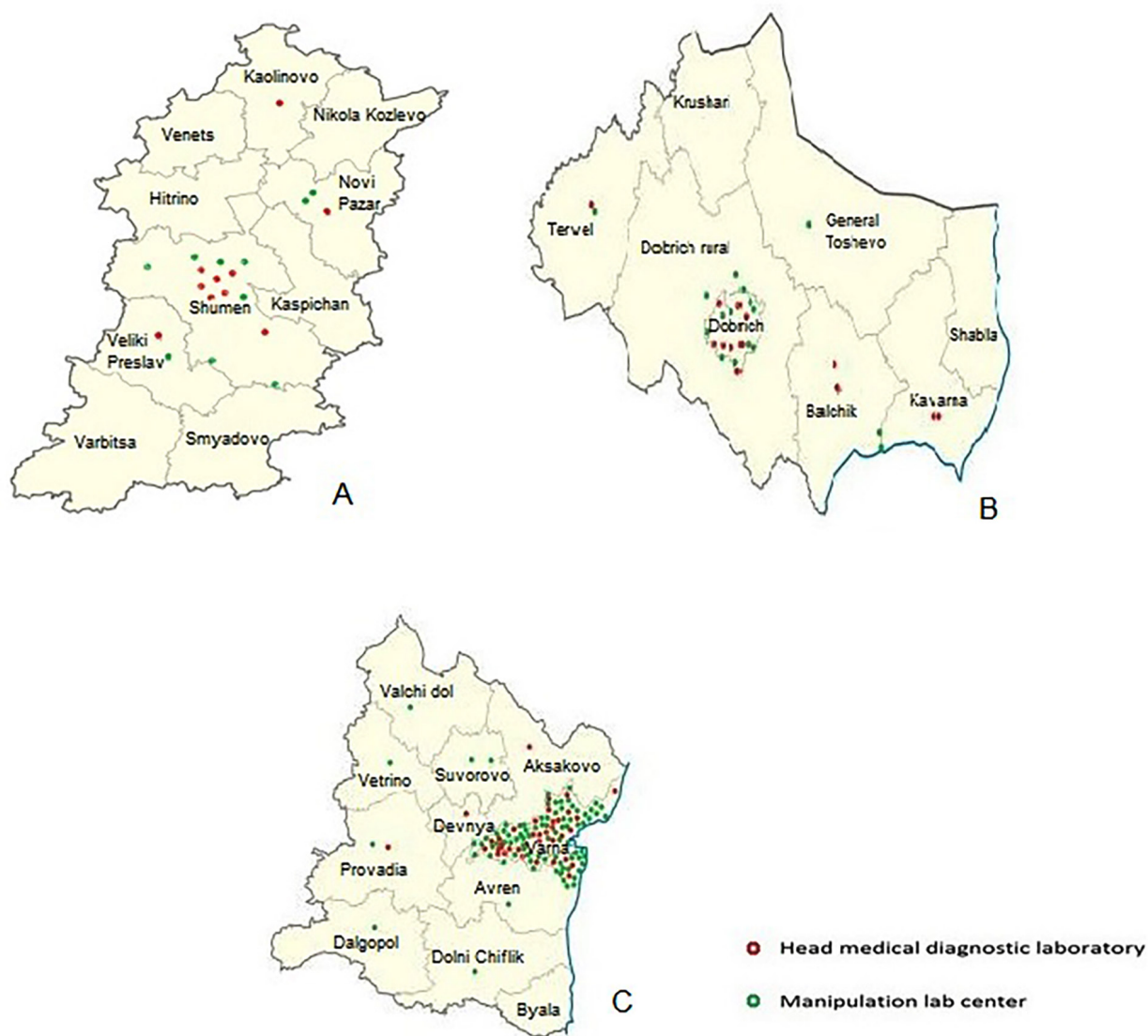


Fig. 4. Cartograms of lab distribution in Regions Shumen (A), Dobrich (B) and Varna (C)

DISCUSSION

Laboratories in Bulgaria and especially in its Northeastern part are unequally distributed and patients in small towns and villages suffer from difficult access to high-quality healthcare services. Accordingly, our survey among patients from the regions of Varna, Shumen and Dobrich showed that people living in small places of residence were not satisfied by the number of available laboratories and their quality. Laboratory services in remote areas are usually offered by the nearest manipulation center of registered laboratories, but the long distance, hard-to-reach terrains and low-quality transport infrastructure are important problems. The existing bad

coordination between laboratories and physicians worsen the integrity between diagnostics and treatment. Smaller municipalities have unfavorable demographic parameters and regressive age structure. The negative changes in the age structure lead to a number of health, social and economic problems. In addition, elderly people are not very mobile and have limited financial resources to ensure transportation to remote regional centers. This population group has an increased need of medical and diagnostic services and is still deprived of enough laboratories.

The proposed mapping of the spatial distribution of laboratories in Bulgaria and in the regions of interest visualizes in a simple way the actual prob-

lems in laboratory services. It can serve as an indicator of the relative distance between laboratories and the shortest route to a nearby laboratory.

CONCLUSION

The increased need of healthcare and social assistance requires increased expenses for medical services. It also requires new resources to provide laboratory services via mobile lab offices and home visits. A better infrastructure of the outpatient healthcare in Northeastern Bulgaria and new players in the laboratory service market will ensure equal access and favorable concurrent environment.

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