

Original article



## MEDICO-LABORATORY SERVICES IN OUTPATIENT CARE IN NORTHEASTERN BULGARIA – STATE AND PROSPECTS

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### ABSTRACT

**Aim:** The aim of this article is to study the satisfaction of patients with laboratory services in outpatient care in Northeastern Bulgaria regarding access and quality of service.

**Study design:** Prospective cohort study

**Material and methods:** The survey was carried out on the territory of Northeastern Bulgaria and covered the districts of Varna, Dobrich and Shumen and thirty municipalities.

The following methods were applied in the study: sociological method by applied direct anonymous questionnaire, documentary method and statistical methods for analysis and interpretation of the data in order to reveal the nature of the observed phenomena and their interrelations.

**Results:** The research data show that 24,4% of the respondents live at a distance of more than ten kilometres from the nearest medico-diagnostic laboratory. The larger share of this patients are residents of small settlements in Northeastern Bulgaria. More than half (55%) of the respondents are not satisfied with their provision of laboratory services, but the majority of patients claim that the location of the selected laboratory is accessible (69,4%) and the quality of the laboratory service is high (83,7%).

**Conclusion:** The main problems in outpatient care are related to the poor provision of medico-laboratory services and specialized outpatient care in the smaller settlements in Northeastern Bulgaria.

**Keywords:** patients' satisfaction, medico-laboratory services, outpatient care, healthcare

### INTRODUCTION

The clinical laboratory is part of the outpatients' and inpatients' care in Bulgarian healthcare system. Medico-laboratory investigations play an important role in

diagnosing and clarification of the aetiology and the development of certain illnesses. The laboratory parameters are often a reliable criterion for corrections in the treatment in definite optimal limits. They are objective in character, which is one of the reasons for the constant increase in the number of the investigated indicators. The use of medical care by the population is one of the most important indicators characterizing the level of provision and accessibility of the customers to various types of health and medico-laboratory services [1, 2].

The access to health care services is related to resource provision of hospital or outpatient care facilities, infrastructure as well as their number in a given area [3]. Nowadays the number of registered medico-diagnostic labs (MDL) is insufficient, and these negative trends including the growing territorial disparities regarding availability are being exacerbated.

The problem with laboratory services provision mainly affects the population in remote areas and villages, where the relative share of people aged over 65 is the largest.

### Aim

The aim of this article is to study the satisfaction of patients with laboratory services in outpatient care in Northeastern Bulgaria regarding access and quality of service.

### MATERIALS AND METHODS

The study was conducted on the territory of Northeastern Bulgaria by means of direct anonymous questionnaires on a paper copy in the period July – September 2015 and covered:

✓ **District of Varna** (Municipalities of Avren, Aksakovo, Beloslav, Byala, Varna, Vetrino, Vulchi dol, Dolni chiflik, Devnya, Dulgopol, Provadiya, Suvorovo);

✓ **District of Dobrich** (Municipalities of Balchik,

General Toshevo, Dobrich, municipality of Dobrich, Kavarna, Krushari, Tervel, Shabla);

✓ **District of Shumen** (municipalities of Veliki Preslav, Venets, Vurbitsa, Kaolinovo, Kaspichan, Nikola Kozlevo, Novi pazar, Smyadovo, Hitrino).

A total of **1039** respondents were subject to the study, divided as follows:

➤ Patients aged over 18 – 502 persons from North-eastern Bulgaria who have visited their general practitioners or MDL during the period of the conducted survey.

➤ General practitioners – 389 respondents, comprising 64% of the registered general practitioners in North-eastern Bulgaria.

➤ Laboratory assistants and laboratory physicians – 148 persons statistically comprising 82% of all laboratory specialists practising in MDL in the outpatient care.

The following methods were applied in the study:

✓ *Sociological method* – by applied sociological questionnaire.

✓ *Documentary method* – used in the analysis of literary sources, documents and normative acts referring to the provision and accessibility of outpatient care in Bulgaria, which have a direct bearing on the studied problem.

✓ *Statistical methods* –for analysis and interpretation of the data in order to reveal the nature of the observed phenomena and their interrelations. For the statistical presentation of the results are used *correlation analysis, dispersion analysis, nonparametric analysis, parametric analysis, graphic analysis*.

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A package of the applied programme SPSS Statistics version 19 (Statistical Package for Social Science) was used in the processing of the data for the quantitative analyses. The statistical difference of the indicators was assessed at a critical level of significance  $p < 0,05$ , e.g. guaranteed probability 95%.

## RESULTS AND DISCUSSION

### ▪ *Distribution of MDLs in Districts of Varna, Shumen and Dobrich*

In District of Varna 35, MDLs and 78 manipulation rooms have been registered in outpatient care (according to the latest data from the Regional Health Inspection – Varna). In District of Shumen 6 MDLs and 4 manipulation rooms have been registered in outpatient care according to the latest data from the Regional Health Inspection – Shumen. In District of Dobrich 5 MDLs and 8 manipulation rooms have been registered in outpatient care according to the latest data (Regional Health Inspection - Dobrich). This includes all medical centres, diagnostic-consultation centres and private practices that have registered laboratory work in outpatient care (Fig. 1). There are no newly registered laboratories in the region from 2014 to the beginning of the survey.

**Fig. 1.** Distribution of MDL in Districts of Varna, Shumen and Dobrich

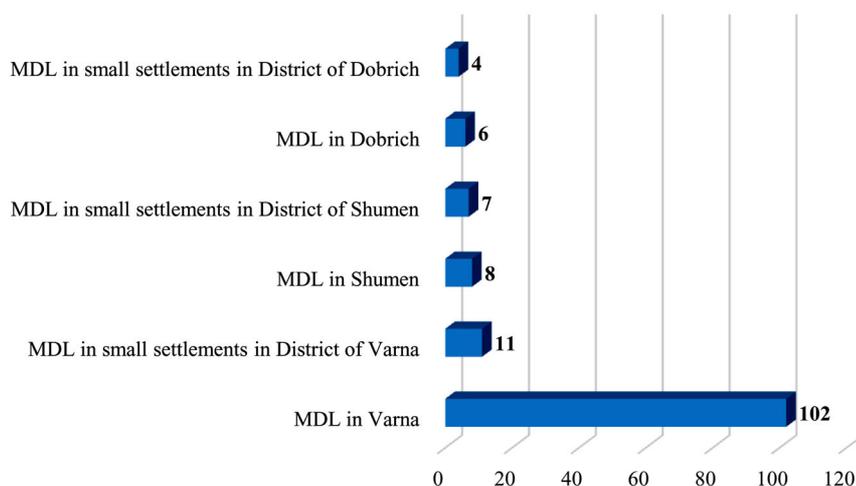


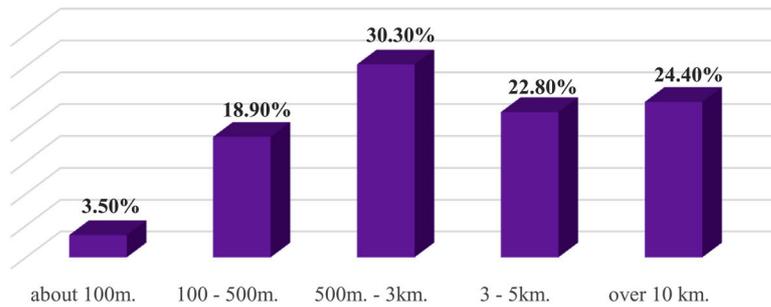
Figure 1 clearly shows the unbalanced distribution of the medico-diagnostic laboratories on the territory of the districts of Varna, Shumen and Dobrich and the concentration of specialists in the district centres and the larger cities. This leads to difficult access to health services that affects mainly retired people in need who live in distant villages and people with disabilities and chronic diseases.

▪ ***The distance between the nearest laboratory and patient's home.***

The provision of MDL in outpatient care affects the

timely medical care. The main negative effect of the shortage of medical diagnostic laboratories in the remote regions is the delay in the necessary laboratory investigations, thus hindering the process of treatment. Research interest is the distance from the patients' location to the closest laboratory to provide them with the necessary laboratory tests. Data show that 24,4% of the respondents live at a distance of more than 10 km from the MDL, 22,8% of the patients - about 3-5 km, and about 52% of the patients report a distance to the nearest laboratory to 3 km (Fig. 2).

**Fig. 2.** The distance between the nearest laboratory and patient's home.



The dispersion analysis revealed a relationship between the distance from the nearest laboratory and the place of residence as compared to the large district towns and the small living places ( $F_{anal.}=44,277$ ;  $p<0,05$ ). The established relation was moderate and linear ( $r=0,387$ ;  $p<0,01$ ). The analysis of the provision in the studied region showed that the MDLs in Northeastern Bulgaria are irregularly distributed, the prevailing part of them being concentrated in the district cities. In the rest of the region, there is a serious shortage of laboratory units.

▪ ***Patients' satisfaction with the provision of laboratory services***

The patient nowadays has the opportunity to freely choose the MDL in which to have their investigations performed. The problem with accessibility of the laboratory services affects mainly the remote regions. The data obtained from the study patients' attitudes about the access to MDL in the regions in Northeastern Bulgaria show that 55% of patients are unsatisfied and 45% are satisfied with the access to laboratory services (Figure 3).

**Fig. 3.** Patients' satisfaction with the provision of laboratory services

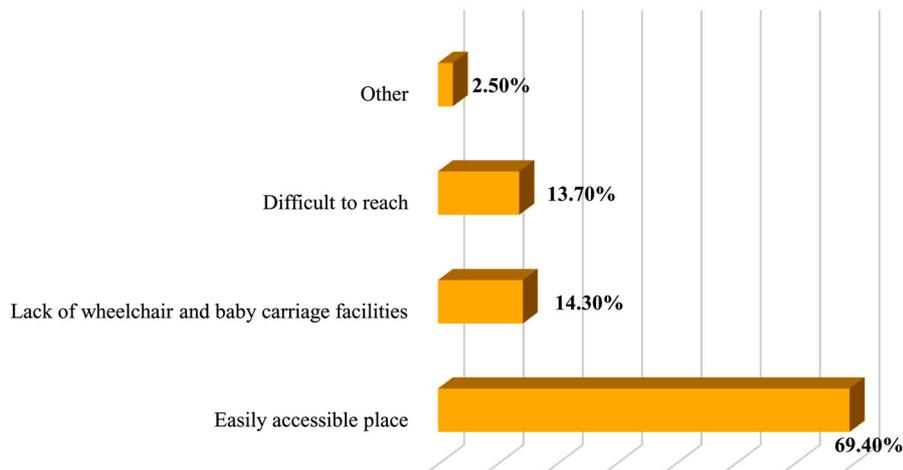


By means of dispersion analysis a relation was established between the distance to the nearest laboratory and the evaluation of the patients for an inadequate number of the laboratory services ( $F_{anal.}=134,229$ ;  $p<0,05$ ), the strength of the relationship is described as significant ( $r=0,592$ ;  $p<0,05$ ). The population in the remote regions in the investigated area are served by the closest situated affiliates, but problems do exist with remoteness, difficult access, adverse transport communications and difficulties with the services. The disadvantages in these places include the small relative share of registered laboratories and manipulation rooms leading to bad coordination with the physicians and interference with the process of treatment.

▪ ***Patients' satisfaction with the location of selected laboratory***

The study investigated the patients' satisfaction with the location of selected laboratory and how the services they offer meet patients' needs. The data show that according to patients, a major part of MDLs are established on easily accessible places (69,4%). The relative share of patients who are unsatisfied with the lack of amenities for wheelchairs and disabled people is 14,3%. The laboratory is difficult to reach according to 13,7% of patients living in a distance of over 10km. 2,5 % of respondents give other answers, indicated that the laboratory was too far from their place of residence (Figure 4).

**Fig. 4.** Patients' satisfaction with the location of selected laboratory

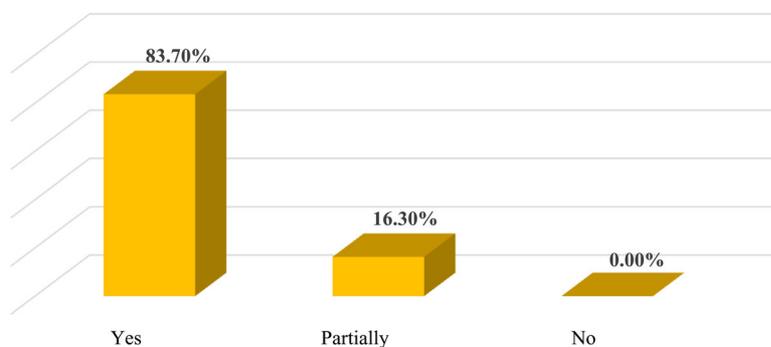


A relation was revealed between the place of residence among district towns, small settlements and patients' satisfaction with laboratory location ( $\chi^2=19,235;p<0,05$ ), which is statistically significant. According to the data, the established relation between the place of residence and laboratory location is inverse and weak ( $r=-0,275;p<0,01$ ).

▪ **Patients' satisfaction with MDL services**

The level of service in medico-diagnostic laboratory directly affects patients' satisfaction. The data of the study show a positive attitude of patients from laboratory services – 83,7% of patients are satisfied, whereas 16,3% of respondents are “partially” satisfied. It is remarkable that participants do not indicate a negative evaluation of medico-laboratory services (Figure 5).

**Fig. 5.** Patients' satisfaction with MDL services



The comparative analysis revealed a relationship between satisfaction with the services in the laboratories and the assessment of the attitudes of the laboratory specialists to the patients which are statistically significant ( $\chi^2=59,108; p<0,05$ ). Most people assess the attitudes of the laboratory specialists positively. By means of correlation analysis, it was established that the relationship is moderate and inverse ( $r=- 0,41; p<0,05$ ).

The relation established between the distance from the nearest laboratory and the assessment of the staff attitude is statistically significant ( $\chi^2=17,443; p<0,05$ ). The patients reporting the high degree of satisfaction are those living at a distance of 500 m to 3 km from the laboratory.

The main factors for the high satisfaction of the customers with the laboratory services result from the work of the highly qualified staff, the accuracy and the speed in

the performance of the medico-diagnostic investigations, the correct and good attitude to the patients.

**CONCLUSION**

Based on our results from the conducted research the following conclusions can be summed up:

1. The results from our study establish an irregular distribution of the medical diagnostic laboratories in the examined region, which is a prerequisite for the impeded access to laboratory services.
2. The results show that 24,4% of the respondents live at a distance of more than 10 km from the MDL and their number includes mainly citizens of small settlements in Northeastern Bulgaria.
3. Territorial imbalances in the provision of health-care services in outpatient care create difficulties for pa-

tients to access medico-diagnostic laboratories. 55% of patients are unsatisfied with their lab assurance, and 45% are satisfied by the same indicator.

4. Almost 70% of the patients assessed the location of the selected laboratory as easily accessible, the remaining 30% considered it difficult to access, unsuitable for disabled patients, mothers with baby carriages or too distant.

5. The majority of respondents (83,7%) are satisfied with the level of service in the selected medical diagnostic laboratory and “partially” – 16,3%. None of the respondents indicated a negative evaluation of the medico-diagnostic laboratory service.

### Inference

The main problems outlined in the outpatient care are related to the poor provision of medico-laboratory services and specialized outpatient care in the smaller settlements in Northeastern Bulgaria. Although patients are greatly satisfied with the overall organization of the provision of laboratory services, there is a trend of increasing dissatisfaction among patients in small settlements. Establishment of more laboratories in smaller towns and villages will provide better access to laboratory investigations and will meet the increasing needs, requirements and expectations of contemporary patients.

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