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Regional inequalities of hospital morbidity and associations with mortality in Lithuania

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ABSTRACT

Background and objective: In Lithuania, hospitalization was planned to be reduced with the approval of the national healthcare restructuring program. The aim of this study was to describe regional inequalities of hospitalization and hospital morbidity in Lithuania and to associate them with mortality in the regions.

Materials and methods: Routine hospital discharge data of Lithuanian hospitals, reimbursed by the Compulsory Health Insurance Fund and registered in database SVEIDRA, was used. Age-adjusted general hospitalization and hospital morbidity rates (per 1000 population) due to cardiovascular diseases (CVD), malignant neoplasms and external causes were calculated. Contribution of diseases, causing major public health problems, to general hospitalization was evaluated by analysis of components. Association of general hospitalization or hospital morbidity and mortality of respective causes was evaluated using non-parametric Spearman correlation.

Results: General hospitalization and hospital morbidity of CVD, malignant neoplasms and external causes had increased from 2005 to 2011. Inequalities of hospitalization and hospital morbidity existed between regions of Lithuania. In Šiauliai, Klaipėda, Utena and Panevėžys regions, general hospitalization remained higher than national level. In Marijampolė, Alytus and Kaunas regions, general hospitalization became lower than Lithuanian average. There was no statistically significant correlation between variation in hospitalization and mortality rates in the regions.

Conclusions: Despite national efforts to decrease hospital care, our study detected the failure of hospitalization reduction and revealed an increase of hospitalization with the existing regional inequalities in Lithuania.

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1. Introduction

Hospital sector as a complex and most resource-consuming part of the healthcare system has always been under great interest in any country. During the Soviet occupation, Lithuania had an extensive hospital system, resulting in high hospitalization rates and ineffective organization of inpatient care resources [1]. After regaining independence, the healthcare system in Lithuania was transformed following international recommendations – the priority was given to the development of primary and ambulatory healthcare services and hospital network reduction [2].

In the past 20 years of independence, the hospital network has undergone major structural changes. Since 1990, a significant number of hospitals were closed, merged or reorganized into inpatient hospices, which resulted in overall reduction of hospital beds. The hospitals were also classified by care level. Primary level hospitals involved hospices of nursing and palliative care; secondary, multiprofile acute care or specialized hospitals of local municipalities or counties; and tertiary, university or other region-central hospitals provided with the most advanced medical technologies and high-competence professionals for treating the most severe inpatient cases. However, the relative supply of hospitals and hospital beds was still too high in Lithuania compared to other European countries [1]. Moreover, a national consensus on hospital network organization was lacking.

More active hospital network reorganization began with the implementation of the Lithuanian healthcare restructuring program, first approved by the Lithuanian Government in 2003 and implemented in 3 stages: 2003–2005 [3], 2006–2008 [4] and 2009–2011 [5]. The program was aimed to continue decreasing extensive hospital network and high hospitalization through the strategic national plan, based on hospital effectiveness and community needs.

In the first stage, this was implemented mainly by continuing institutional reorganization – hospitals, which did not meet safety and effectiveness requirements, were either merged or reorganized. In the second stage aside further institutional changes, the restructuring reform involved introducing alternative forms of inpatient care services (i.e. day surgery, day care). The third stage set a different approach of restructuring by implementing coordination of inpatient care services delivery through national reimbursement of hospitals.

Until 2009, public hospitals were reimbursed from Compulsory Health Insurance Fund, on the basis of provided healthcare services within the limits of yearly contract with sickness funds. The level of hospital was not taken into account. The third stage of restructuring brought a new regulation mechanism through financial incentives. According to the healthcare level, available resources and community needs, hospitals were classified into 3 types: republic, region, and municipality. Under this classification, acute care hospitals were contracted and reimbursed for only those services which could be provided according to their type. In this way extensive hospitalization tended to be regulated. Needless to say, structural changes of hospital network and their services might have formed prerequisites for regional inequalities of inpatient care.

In the period of healthcare restructuring program 2003–2011, the overall number of general care hospitals decreased from 72 to 66, and hospitals beds (excluding nursing and palliative care) rate (per 1000 population) decreased from 8.96 to 7.05 [6], but acute care hospital bed rate (per 1000 population) decrease was not that intense (from 5.91 to 5.42) [7].

After restructuring reform, Lithuanian regions differed by the supply of hospital care resources – the distribution of different level hospitals and hospital beds was unequal in the regions, urban and rural populations did not have the same supply of inpatient healthcare. In 2011, the acute care hospital bed (per 1000 population) rates were different in the regions: 5.83 in Vilnius region, 7.05 in Kaunas, 6.41 in Klaipėda, 4.66 in Šiauliai, 5.09 in Panevėžys, 3.98 in Alytus, 3.33 in Marijampolė, 2.89 in Tauragė, 2.90 in Telšiai, 4.59 in Utena [7]; and differed by healthcare level [6]. Historically, the highest healthcare level was concentrated in Vilnius and Kaunas regions. Each of these two regions has university hospital, together placing a few hospitals of tertiary and secondary level. Approximately 50 percent of hospital beds in those regions belong to tertiary level hospitals. As major regional centers, Klaipėda, Šiauliai and Panevėžys also has multiprofile tertiary hospitals (around 10%–20% of total hospital beds in the region) and a few secondary level acute care hospitals. The other smaller regions (Alytus, Marijampolė, Tauragė, Telšiai and Utena) contain only local secondary level hospitals.

As the healthcare restructuring program was purposed to decrease hospitalization to the level of European Union (EU) average of approximately 180 (per 1000 population), hospitalization rate (excluding cases of nursing hospices) was 247 (per 1000 population) in 2011 [7]. The national hospitalization level was not reduced to the intended level. Furthermore, with unequal hospital care supply the differences in hospitalization might exist between the regions in Lithuania. Thus elaboration of investigations of hospitalization rates and their variation is needed. Possible explanations or reasons of the situation are also under interest.

The aim of this paper was to describe regional inequalities of hospitalization and hospital morbidity in Lithuania. Additionally, the associations of hospitalization and mortality rates were assessed in order to evaluate whether higher or lower prevalence of in-patient care is correlated to population health status in the regions.

2. Materials and methods

Age-adjusted hospitalization rates (per 1000 population) of 10 Lithuanian regions were calculated. The final year of healthcare restructuring reform stages were taken into account. Routine hospital discharge data were obtained from the Compulsory Health Insurance Fund database SVEIDRA; data on deaths, from the National Registry of Death Cases and Causes; and population numbers were received from the National Department of Statistics. Inclusion criteria for hospital data were discharge cases of acute care (nursing, rehabilitation, tuberculosis and psychiatric treatment cases were excluded). For disease-specific hospital morbidity and mortality, diagnosis of discharge or cause of death (based on ICD-10) were included as follows: cardiovascular diseases (CVD) comprised code