

Mgr Karol Tarkowski

Interregional migration of patients hospitalized in Poland - conditions, trends, effects

Streszczenie w języku angielskim

Introduction

Mobility of patients in order to take advantage of health services in a region other than where they live has lasted for many years, but the creation of a system of universal health insurance twenty years ago and the intensification of migration were the premises for creating and analyzing data on the subject. Patient migrations enforce the redistribution of funds among all the regional branches of the National Health Fund in Poland. They can be the subject of scientific research and are discussed at both the Ministry of Health and National Health Fund. Another reason to analyze patient migration is that the quality and safety of patients should be the first priority, which was emphasized in the assumptions to the draft law on the quality in health care and patient safety. The premise for studying the phenomena of patient migration is also the need to plan investments in health care, as well as the proper allocation of medical staff in order to guarantee the patients access to health services. The migration analysis shows these needs of the patient which he can not satisfy in the place of residence, but it also indicates the health care institutions that specialize in a given type of service and attract patients from other areas of the country.

Objective of the study

The main goal of the doctoral thesis is to know the scale of the phenomenon, demographic and medical conditions as well as costs of hospitalization of patients outside the region of registration throughout Poland in 2013-2017, as well as to examine changes in this phenomenon, its conditions and costs.

Detailed objectives:

- 1) Knowing the ranges and values of migratory services for patients of the Lublin Regional Branch of the National Health Fund in relation to other regions in the field of hospital treatment under the contracts "hospital wards" (Publication 1).
- 2) Knowing the ranges and values of migratory services for patients of the Lublin Regional Branch of the National Health Fund in relation to other regions in the field of hospital treatment within the framework of health and therapeutic programs, chemotherapy, radiotherapy and highly specialized services (Publication 2).
- 3) Assessment of the number of patients hospitalized throughout Poland in regions outside their region of residence, as well as the demographic and medical conditions and costs of such hospitalizations (Publication 3).
- 4) Assessment of time changes in the number and cost of hospitalizations of patients outside the region of registration throughout Poland in 2013-2017, as well as the demographic and medical conditions of this phenomenon.

Material and methods

The research material were individual unidentified data regarding hospitalizations in a particular region of patients registered in another region in Poland in 2013-2017, obtained from the National Health Fund. For each such hospitalization the following data were given: the regional branch of NHF in which the patient was hospitalized, the regional branch of NFH in which the patient was registered, age, gender, group of diseases according to ICD10 classification, group of ranges and cost of services provided.

A database of around 2.5 million cases was built. The statistical analysis was performed using the STATISTICA software (Statsoft, Tulsa, OK, USA) and the Microsoft EXCEL software. Absolute numbers and percentages for qualitative variables were estimated, while means and standard deviations as well as totals for quantitative variables were estimated. The following statistical tests were used: chi-square stochastic independence test, F test of analysis of variance, Pearson correlation coefficient, determination coefficients, coefficients of variation. For the time series, absolute and relative differences as well as linear trend models were estimated using regression analysis.

Results

The largest value of services provided to patients from the Lublin region in other regional branches of the National Health Fund in 2015 in the field of hospital treatment concerned benefits under the contracts "hospital wards" (almost 159 million PLN). Patients

from the Lublin region most often migrated as part of treatment in hospital wards to the Mazowieckie and Podkarpackie Regions, then to the Śląskie and Małopolskie Regions. The largest financial values of hospital services outside the regions of registration were noted in the field of orthopedics, cardiology as well as obstetrics and gynecology. The most common group of migratory patients in the field of hospitalization consisted of the women giving birth outside the Lublin region. It was also the highest cost item related to the migrations of patients from the Lublin Regional Branch of NHF to other regions. The highest value were hospitalizations settled with the following homogeneous groups of patients: "total hip or knee replacement with bone reconstruction, hip arthroplasty with the use of metatarsal stem, hip kapo plastic", then lower migration costs associated with the "childbirth" group, "transplantation of allogeneic hematopoietic cells from an alternative donor" and neonatal care.

In 2015, the Lublin Regional Branch of NHF noted a negative migration balance of hospitalized patients. Hospitalizations were provided to patients from the Lublin region in medical institutions throughout Poland. Most of the services provided to patients from the Lublin region as part of health and therapeutic programs, chemotherapy, radiotherapy and highly specialized services were provided in the Mazowieckie region. The highest cost value in terms of health and therapeutic programs was involved in the services provided to patients in connection with the treatment of pulmonary arterial hypertension, followed by a lower value - for treatment of hepatitis C and multiple sclerosis. As in the case of health and therapeutic programs, the highest value chemotherapy services were provided in the Mazowieckie Regional Branch (about 85%). The highest value migratory services concerned chemotherapy in the "hospitalization" mode (64%), then in the "one-day" mode (23%) and in the outpatient mode (13%). In the scope of highly specialized services, the highest cost value was involved in the heart and thorax aorta surgery in adults as well as heart transplants, liver transplants and cardiac interventions.

The National Health Fund paid for 526.5 thousand hospitalisations of patients who were registered in one voivodeship but were hospitalized in another voivodeship in Poland in the year 2017. The majority of these hospitalizations (about 20%) flowed in to mazowieckie voivodeship from other voivodeships, half the size of hospitalizations as to mazowieckie flowed in from other voivodeships to śląskie, wielkopolskie and małopolskie voivodeships, to remaining voivodeships 6.5% or fewer. A significant positive correlation between the inflow of patients' hospitalizations to particular voivodeships and their outflow from these voivodeships in Poland. This means that the greater the inflow of hospitalizations to a

voivodeship, the greater outflow of hospitalization from the given voivodeship on average. The most outflow of patients' hospitalizations to other voivodship was from mazowieckie, followed by wielkopolskie, małopolskie and śląskie. These voivodeships noted, at the same time, the greatest inflow of patients' hospitalization from other voivodeships, with their numbers exceeding the outflow of hospitalizations. Hence, these voivodeships had a positive balance of the number of patients' hospitalizations. Kujawskopomorskie, podlaskie and dolnośląskie voivodeships also noted a positive balance. However, the outflow greater than the inflow, i.e. a negative balance of patients' hospitalisations was identified in the remaining 9 voivodeships, with the biggest in lubuskie.

A large number of migration of hospitalized patients occurred between neighbouring voivodeships. The high acclaim of the regional medical centres (like in wielkopolskie or małopolskie) which attract patients from adjacent voivodeships is also noticeable. A substantial attractiveness of the mazowieckie voivodeship, Warsaw in particular was also noticed. It had a high inflow of patients' hospitalization from the neighbouring voivodeships, but also from other voivodeships, including małopolskie, podkarpackie or śląskie.

Women predominated among migrating patients' hospitalizations, accounting for 56.4% to 59.8% of hospitalizations between voivodeships in Poland in 2017. The age of patients hospitalized in other regions than they were registered in 2017 differed significantly between voivodeships, from the following three voivodeships: kujawsko-pomorskie, lubelskie and podlaskie, 20-year-olds constituted the biggest group of migrating hospitalized patients, while 60-year-old patients predominated from the remaining 13 voivodeships. While analysing the number of migrating hospitalized patients according to the International Classification of Diseases, Tenth Revision (ICD10), it was found that the greatest number of migrating patients' hospitalizations were due to neoplasms and diseases of the circulatory system.

The total cost of migrating patients' hospitalizations between voivodeships in Poland in the year 2017 amounted to 2.2 milliard PLN, i.e. approximately 138 million PLN for each voivodeship on average. However, the distribution of costs of migrating hospitalizations between the voivodeships was not uniform. Nearly a quarter of costs (23%) flowed in to the mazowieckie voivodeship. Śląskie ranked second, with 11% of the total cost flowed in, followed by małopolskie with inflow of 9%. The highest costs were that of the hospitalization in orthopaedics, lower in cardiology, surgery, obstetrics and gynaecology, neurosurgery and otolaryngology units.

During 2013–2017, there were significant increasing trends in the number and costs of hospitalizations of patients outside the provinces of their registration. The number of such hospitalizations grew significantly by 14.6 thousand, on average, from year to year, and the total costs of such hospitalizations grew significantly by PLN 85.9 million, on average, from year to year.

There was a large variation of provinces in terms of the inflow of patients and the costs of their hospitalizations, while there was a small variation in terms of the outflow of patients and the costs of their hospitalizations in the analyzed years. Among the patients hospitalized outside the province of their registration, women were slightly dominant, in terms of the age of patients hospitalized outside their regional registration, 60-year-olds dominated, and their share in the subsequent years increased, while the shares of other age groups remained unchanged or decreased. The highest, and growing from year to year number of hospitalizations outside the regional registration, was due to neoplasms and diseases of the circulatory system. Fewer migratory hospitalizations were due to diseases of the eye and adnexa, as well as respiratory, digestive, musculoskeletal or genitourinary systems, pregnancy, childbirth and the puerperium or injury, poisoning, and certain other consequences of external causes. Other groups of diseases were less frequently the causes of migratory hospitalizations.

The greatest inflow of hospitalizations occurred in the Mazowieckie province and thus the most funds. Twice as few hospitalizations flowed into the following provinces: Małopolskie, Śląskie and Wielkopolskie. Even fewer hospitalizations flowed into the remaining provinces. Inflows of hospitalizations to 15 provinces increased year by year with the exception of Mazowieckie, where the inflow decreased from 2013 to 2015, while in 2016 and the following year it increased again.

Positive migration balances of the number and costs of migratory hospitalizations were held by the provinces with the largest inflow: Mazowieckie, Małopolskie, Śląskie and Wielkopolskie. In addition, the following provinces had a positive balance in the number of migratory hospitalizations: Dolnośląskie, Kujawsko-Pomorskie and Podlaskie. The Kujawsko-Pomorskie province had a positive balance of migration hospitalization costs. The remaining provinces recorded negative migration balances of the number and costs of hospitalization. In the Mazowieckie province, the balance of the number of hospitalizations decreased from year to year from +62.1 thousand in 2013 to 49.2 thousand in 2017. The balance of migration hospitalization costs there decreased from PLN 332.3 million in 2013 to PLN 295.0 million in 2016, but in 2017 it increased to PLN 310.4 million.

Analyzing the groups of medical specialties that patients were hospitalized, it can be seen that the most migratory hospitalizations concerned obstetrics and gynecology, general surgery, orthopedics and traumatology of the musculoskeletal system. About every tenth migration hospitalization concerned children, and the share of costs of children migrant hospitalizations in the total costs of migratory hospitalizations was about 7% in the years analyzed.

Conclusions

- 1) The number of patients hospitalized outside their regional registration and the costs of their hospitalization increased each year in the analyzed years.
- 2) The largest number of patients hospitalized outside their regional registration was recorded in the Mazowieckie Province, twice less - in Silesia, Wielkopolska and Małopolska. A large part of migratory hospitalizations were between neighboring regions, but they also inflowed to the main centers.
- 3) Women accounted for more than half of migratory hospitalizations in individual regions and in Poland.
- 4) In terms of the age of patients hospitalized outside their regional registration in the years 2013-2017, 60-year-olds dominated and their share in the subsequent years increased, whereas the shares of other age groups remained unchanged or decreased.
- 5) Most and more from year to year of hospitalization outside the provincial residence was due to cancer and cardiovascular diseases, and the largest costs occurred in the orthopedics and traumatology of the musculoskeletal system as well as cardiology departments.
- 6) The conducted migration study of hospitalized patients and changes in individual regions can be used to create voivodship priorities in health care, as well as to indicate investment and human resources resulting from territorial deficiencies in the supply of health services, and thus can be helpful in shaping the health policy of our country.