

SPATIAL INEQUALITIES IN HEALTH CARE PROVISION IN ROMANIA: MILESTONES FOR TERRITORIAL SUSTAINABLE DEVELOPMENT

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Abstract: Health has been and still remains a fundamental objective of sustainable development policies, reducing inequalities and inequities, in terms of healthcare access and healthcare provision representing milestones for national development. Underfinanced during the communist period and after 1989, the Romanian healthcare system is struggling to adapt to new challenges, trying to cope with the increasing demand for medical services. Several attempts at reform, in the absence of substantial investments and long-term strategies, brought this system numerous times into crisis, both providers as well as beneficiaries of medical services being dissatisfied. Geographic location of healthcare units, social and development status, represent other barriers that limit the access of certain population groups to health services, affecting quality of life and increasing their vulnerability. Using statistical and spatial analysis, this paper highlights the inequalities that arise in providing medical services at territorial level, emphasizing concentration of medical staff and medical units in Romania's major cities and severe shortage of physicians in small towns or rural areas. The reduced degree of coverage by medical personnel overlaps areas underdeveloped or socially deprived, characterized by high levels of unemployment, low levels of education and poor housing, contributing to the overall expansion of unprivileged areas, with precarious health and reduced quality of life that, in the absence of appropriate policies, no longer meet the principles of sustainable development.

Keywords: Health, healthcare provision, inequalities, deprivation, sustainable development, Romania

1. INTRODUCTION

Sustainable development is a complex concept that has emerged due to the concern for the environment (Ianoş et al., 2009), the idea being enriched over time with an economic and social dimension. Sustainable development has become an objective of the European Union (EU) since 1997, when it was included in the Maastricht Treaty and it was adopted at the Gothenburg summit, in 2001. At the Earth Summit held in Rio de Janeiro, in 1992, the world leaders adopted the principles of the Rio Declaration and Agenda 21, as a sustainable path of development in the 21st century (Spangenberg et al., 2002).

The importance of improving people's health as well as their environment, as a precondition for

sustainable development, was recognized at the highest level of decision making. Human health was highlighted as a key element of sustainable development, according to Principle 1 of the Rio Declaration: "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature" (Spangenberg et al., 2002).

The final resolution adopted by Heads of State and Government at the United Nations Conference on Sustainable Development, entitled "The future we want" (2012), stresses in the chapter Health and Population that "health is a precondition for and an outcome and indicator of all three dimensions of sustainable development" (Evans et al., 2012). The same document also highlighted the importance of universal health coverage "to enhancing health, social

cohesion and sustainable human and economic development” (Evans et al., 2012).

Health is therefore considered as a dimension of sustainability which, along other dimensions, such as education, are pillars of development. Poor health of the population is a factor in underdevelopment and social stagnation (Tizio, 2004). At the same time, improving public health and the environment, as part of EU policies, represents an opportunity for sustainable development. Moreover, health is more and more presented as an important goal of national development (Berman, 1995). Health as well as health policies are key elements for the sustainable development process, therefore, sustainable development must contribute to maintaining long-term relationships between growth and human development (Tizio, 2004; Salvati, 2014).

Ageing population, increasing life expectancy in the developed countries and associated changes in the structure of morbidity and mortality (Dumitrache, 2007), have determined the rising cost of health services and public expenditure for health. Providing quality health care and equitable access, in the context of increasing demands and higher costs, represent major challenges for these countries. Although access to healthcare is an important issue which concerns equally health and development (Afandiyev et al., 2014), there are still many inequalities in health care provision and access within countries both from the developed and the developing world.

Even if most governments declare that their citizens benefit from universal and equitable access to quality health care, even in the developed world this goal is difficult to achieve; also, we should say that standards relating to how one can define and measure “equitable access” have not been determined or internationally accepted (Oliver & Mossialos, 2004). The more obvious are the disparities between the wealthiest and poorest regions, rural areas and urban ones but also between people with high incomes compared to those with low incomes (Gwatkin, 2001; Victora et al., 2003; Gasparini & Panadeiros, 2005).

Access to health care services becomes a serious issue for health. Fewer health care providers, long distances to the nearest medical facility, limited public transport, lack of means of transportation, high travel costs, continue to be major obstacles to access quality and timely healthcare for rural populations (Obrist et al., 2007).

Uneven distribution of health care resources between rural and urban areas reduces the chances for the rural population to benefit from care, and it has negative impacts on their health status and quality of life. Moreover, the lack of a health workforce in rural areas remains an intractable problem, both developed

countries and developing ones reporting an asymmetrical geographic distribution of health professionals, in favor of more prosperous urban areas (Wright et al., 1987; Priester & Elliott, 1995; Dussault & Franceschini, 2006; Vanasse et al., 2007; Lehmann et al., 2008; Grobler et al., 2009).

Rural areas register higher rates of morbidity and mortality, most often standing out through the higher rate of unemployment, low-wages, lower level of education, an increasing proportion of elderly residents and a greater need for health care compared to urban areas while rural residents are being left behind in terms of health access issues (Jones et al., 2011).

These differences between urban and rural areas lead once again to the “inverse healthcare law” which states that those who have greater needs benefit least (Hart, 1971). However, further interventions to address geographical disparities in health care provision are limited and inequitable access to health care continues to be a global issue (Wilson et al., 2009). This re-emphasizes the role of an efficient healthcare system, responsive to people's needs, in order to achieve the health Millennium Development Goals (Travis et al., 2004).

In Romania, during the communist period, population health did not represent a priority. For this reason, investment in the health system was reduced, which is reflected in the poor health of the population, as represented in major disparities from this point of view between Romania and EU countries. After 25 years of transition, Romania still faces many serious problems regarding the organization and financing of the health care system, which is still focused on curative, hospital care, at the expense of primary care (Vlădescu et al., 2008). In addition, the lack of coherent planning of human resources for health has resulted in shortage of medical personnel, geographical imbalances in distribution of health professionals and significant disparities in health care provision, rural areas being the most disadvantaged. The development, demographic and social changes (economic crisis, demographic aging, unemployment, reduced income) will exacerbate the existing issues, leading to an increased need for healthcare spending while the budget allocated to health is shrinking.

Under these circumstances, only a correct assessment of health care needs, and especially of the territorial disparities in health care provision, a rigorous planning of human and financial resources for health, as well as increasing efficiency of their utilization, will ensure sustainable territorial development.

The paper discusses the pertinence of health to the territorial sustainability and societal well-being, pointing out that spatial inequalities in health care

provision along with social and material deprivation could contribute to the expansion of unprivileged areas, with precarious health and reduced quality of life, which no longer meet the principles of sustainable development.

2. DATA AND METHODOLOGY

The research methodology is based both on (1) the statistical analysis of available data on health care from the National Institute of Statistics (2012, 2013), data from the last census (2011) on education, employment and housing; and (2) the spatial analysis using GIS to identify geographical distribution patterns of health resources (human and material) and socio-economic deprivation.

In this paper, we consider a set of indicators, which comprehensively evaluate spatial dimensions of health care provision and sustainability in order to address spatial problems and inequalities. An outline of areas of health professional shortage is based on the outcomes of analysis of medical personnel and medical units variables. In order to identify underprivileged areas considered to be related to health care spatial inequalities, an overall deprivation index was calculated. It has been structured starting from the reference domains used by Townsend et al. (1987), respectively education, employment and housing, taking into account the availability of information in the last census. Three deprivation indices are constructed by standardization and aggregation, integrating indicators generally extracted from census area data as follows: employment index, housing endowment index and education index. Due to data

inconsistency on the above mentioned sub-domains, only a range of relevant variables which are correlated were selected (Table 1). These indices have been combined using simple additive techniques, resulting in an overall deprivation index, its values expressing an evaluation of both social and material deprivation.

Subsequently, data have been geo-referenced using GIS, allowing the analysis of geographical patterns of deprivation at territorial administrative units level or the investigation of further spatial correlations between deprivation and health care outcomes. In order to estimate the intensity of the relationship between the index of overall deprivation and the degree of coverage with doctors, the Pearson bi-variate correlation coefficient was calculated. The analysis was developed at national level, based on 3182 administrative territorial units, all localities from both urban and rural areas, including Bucharest, being considered.

A serious limitation is represented by the scarcity of statistical data relating to health and healthcare at micro-territorial level, as well as by the weak matching of existing statistical information, collected at the territorial level, by various institutions which currently hold similar databases. This reduces once again the possibilities of constructing a complex index or correlation with other indicators.

3. RESULTS AND DISCUSSION

Better health outcomes depend on effective interventions delivered by better health systems. Health care refers not only to the treatment of diseases but also includes prevention, continuing or palliative care.

Table 1. The Overall Deprivation Index (ODI)

		– Indicators/criteria	
Overall Deprivation Index (ODI)	Housing Endowment Index HE_I Reflects the housing based amenities access including overcrowding	<ul style="list-style-type: none"> – % of houses without connection to the drinking water supply system – % of houses without bath and toilet – % of houses without sewerage system – Number of persons/household – Number of persons/room 	Pearson Correlation 0.452**
	Education Index ED_I Reflects knowledge-related assets, educational status, including illiteracy	<ul style="list-style-type: none"> – % people without a graduated school – % illiterate people (of total residents) – % women with secondary education – % women with higher education 	-0.241**
	Employment Index (Em_I) Reflects economic status, income, economic pressure of the unemployed and pensioners	<ul style="list-style-type: none"> – % unemployed over 16 (of all economically active population) – % inactive population of total population – % dependent population (of total residents) – retired/employed population ratio 	0.155**

The efficiency and the proper functioning of health systems are also highlighted by the way in which they respond to population healthcare needs.

Most often, at a territorial level, there is a wide gap between health care needs and health care provision, emphasizing a deficient spatial allocation of health resources and, in particular, an imbalanced distribution of health professionals and health care facilities. In order to reduce this gap, both planning and proper allocation of health resources are required, to respond adequately to the needs of the population and to improve access to health services. It is otherwise known that access to health services, medical staff competence and infrastructure could contribute to the improvement of population health status. In the meantime, inequalities in health care provision could be reflected in health outcomes, respectively a growing number of deaths or increased disability among disadvantaged populations. This is why improving the access to healthcare services has been, in many countries, a major goal of health legislation and planning availability of health personnel, the rate of services use, health consumer satisfaction being some modalities of its assessment (Andersen et al., 1983).

Health professionals and health infrastructure represent important parts of the health system, healthcare activities being sustained by them; also, their competence and capacity greatly influence the quality and efficiency of health care services or health system performance. Romania is not very well positioned in terms of health system performance indicators. In fact, the report of the Presidential Commission for the analysis and development of public health policy in Romania has characterized the Romanian health system as being “one of the most inefficient in Europe” (Vlădescu et al., 2008). The number of physicians per inhabitant remains below the European average (1.9), as well as auxiliary medical personnel/population (3.7), while the relatively high number of hospital beds and the high rate of hospital services use show the low efficiency of primary health care services, emphasizing a health system focused on the treatment of diseases rather than on prevention.

This battle that seems lost, after 25 years of attempts to reform and restructure the Romanian health care system, is partly explained by a traditionally reduced public expenditure on health; an annual average around 4% of GDP is placing Romania on the last position in EU, the allocated resources being appreciated as very reduced comparing to the needs of the population (Societatea Academică din România, 2013).

Even from this point of view, quantifying and

presenting the results at the county level is reducing the relevance and efficiency of this study by leveling to some extent the situation up to the national scale instead of outlining the serious issues arising at the micro-territorial scale; therefore, taking concrete measures to correct them is fairly difficult. Also, various attempts to evaluate the population health status by health authorities are, to some extent, highlighting nationwide the population’s collective needs without focusing on differences that may arise at the regional level. Pointing out these differences which arise at the regional level are very important, because both demand and supply are determined at territorial level by socio-demographic elements such as the age structure of the population, an ageing population leading to an increasing demand for health services and health personnel (Zurn et al., 2004). In the absence of this spatial assessment of health care needs and health outcomes, both planning and efficient resource distribution becomes an even more difficult task as to measure the existing service provision as well as to identify under-provision of services in different areas is the first step towards reducing spatial inequities.

The Romanian health system has to cope with shortage of medical personnel; although statistics indicate an increasing number of physicians since 1990, from 2011 one can notice a dramatic reduction, from 52 541 physicians to 39 896 physicians in 2013 (Feraru, 2013). Even if, compared to the communist period, admission to medical schools has become less difficult and the number of students has increased, as have the specialization opportunities, insertion of these medical graduates into the labor market in Romania is deficient.

Low wages and difficult working conditions reduce the number of people who are turning to this profession, as well as the number of those who practice after graduation. The emigration of health professionals is also an alarming phenomenon, which became more pronounced after 2007, when Romania joined the EU. This phenomenon is not necessarily new, physicians always tend to move in search of better living and working conditions, improved salaries or better opportunities for career development (Dolea et al., 2009a), but Romania never experienced it before 1990. Although there are no data to evaluate exactly how many doctors have left the country, many institutions present different statistics, reflecting mainly the potential migration more than the real one (given that the only evidence are the physicians applications for obtaining certificates of recognition of studies, required abroad), so that an estimated 10% of health

professionals have emigrated since 1990. However, Romania is a sender country, and the most frequent destinations are France, United Kingdom and Germany (Dumitrache, 2014).

The negative trends in physician numbers' is not the only issue; their unequal geographical distribution reveals major disparities between regions and especially between rural and urban areas, limiting the access of the population to health care (Dumitrache & Dumbraveanu, 2008). Thus, less than 20% of doctors (5 592 of 52 541) are practicing in rural areas where 50% of the Romania's population lives (National Institute of Statistics, 2012).

The international literature indicates that geographical imbalances of health professionals distribution in and between countries is a common long lasting problem, faced by many developed and less developed countries, which unfortunately is difficult to solve. So although half the world's population lives in rural areas, they are served by only 38% of the total nursing workforce and by less than a quarter of the total physicians (Dolea et al., 2009b). These disparities occurring in health care provision, due to an imbalanced geographical distribution of health personnel, could turn into great disparities in health outcomes between the rural and urban populations (Dussault & Franceschini, 2006).

In Romania, the territorial distribution of physicians shows evident inequalities between regions of the northern, northwest, southwestern part of the country and other regions, in terms of degree of coverage with doctors. In fact, the large number of population per physician, as well as the absence of physicians in poorer regions or in remote rural areas, is a common phenomenon that apparently cannot be solved (Fig. 1).

The analysis of this indicator at territorial level shows that about 5% of Romania's rural localities have no doctors while in 400 localities, representing approximately 13% of the total, the number of patients assigned to a doctor surpasses 3000. One can identify such cases particularly in the northeast and southeast of Romania, overlapping the counties of Botosani, Neamt and Vaslui, in Moldavia, or Teleorman, Ialomita, Calarasi, in Muntenia and Tulcea, Constanta in Dobroudja, but also in the northwest (Bihor or Salaj) and in the southwest (Caras Severin).

This situation has a negative impact on both patients and health professionals, as unmet population needs, overworked doctors, high level of substitution by alternative providers such as pharmacists or even local, traditional healers. These problems are even more serious since many areas of Romania have a significant aged population with high level of morbidity or co-morbidity.

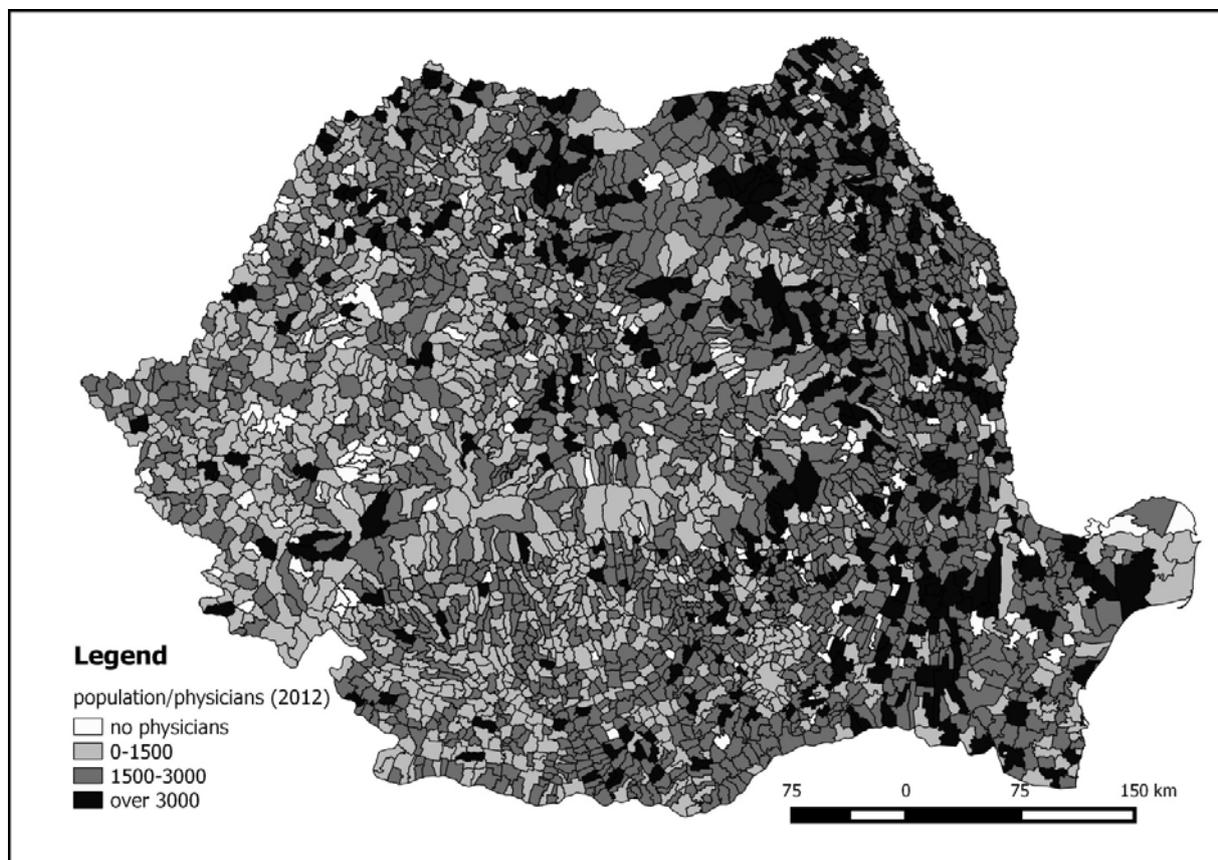


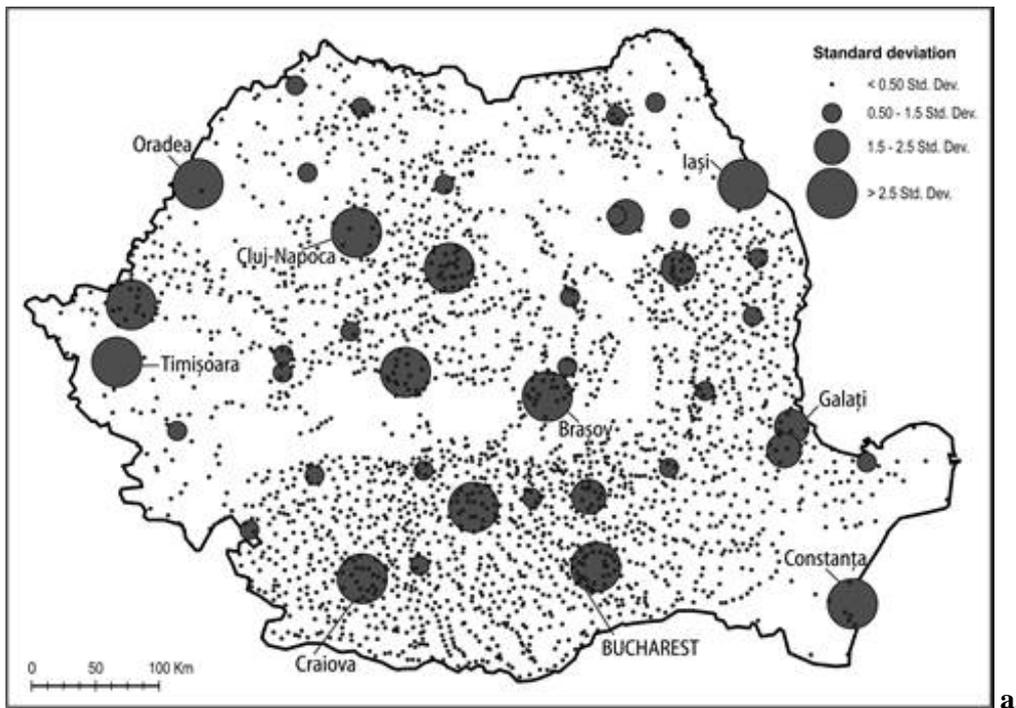
Figure 1. The degree of coverage with physicians

Besides these geographical discrepancies between urban and rural areas, one can notice also imbalances in health care personnel supply between health care units as well as between medical specialities.

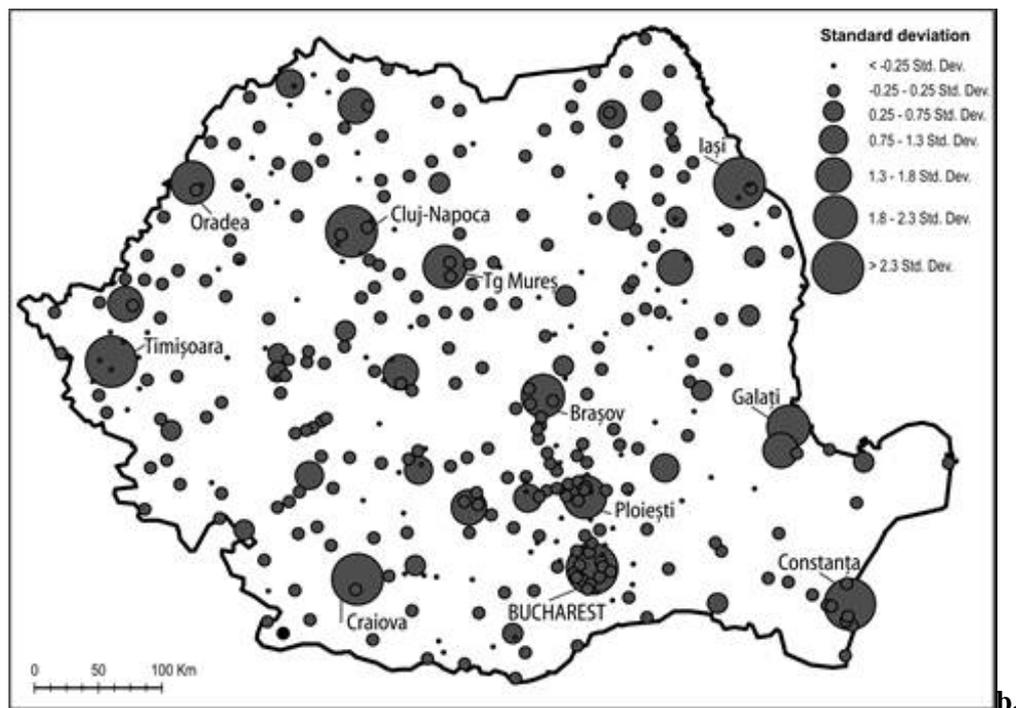
Media frequently present situations where, even in cities, specialized hospitals are poorly served or are closing in the absence of pediatricians or county hospitals are without anesthetists or radiologists. In the absence of such specialists, diagnosis or treatment of

cases is difficult or it comes too late. Patient complaints relating to incorrect diagnosis or treatment are also frequent. Large urban centers, Bucharest, Iasi, Timisoara, Cluj-Napoca, Craiova, Galati, account for the largest number of doctors and medical units, as opposed to smaller towns or rural communities (Fig. 2a, 2b).

The emergence, after 1990 of the private sector was regarded as an alternative to correct the existing deficiencies in the public system.



a.



b.

Figure 2. Territorial concentration of physicians (a) and medical units (b)

However, this sector has had a slow development due to an unsupportive legal framework, bureaucracy and lack of efficient public-private partnerships.

The private sector accounts for a low share of financing of the Health Care System, compared to most of the EU countries; only 20% are private funds while 80% are public funds. Private health insurance (which should support private health services) is modestly developed in Romania, it being of an optional and additional character. Recent attempts at introducing compulsory private insurance proved to be unpopular and they have generated waves of protests, including riots in January 2012. As regard to medical units in the private sector, 4 321 general practitioner offices, 7 716 specialized medical offices, 940 clinics and 96 hospitals were registered in 2012 (National Institute of Statistics, 2013).

While the number of public dental practices/offices and pharmacies has diminished with a vast majority of them currently operating in the private sector, most of the general practitioner offices or hospitals – 365 out of 461 in 2012 (National Institute of Statistics, 2013) still belong to the public sector hence depended on public funding. Some private medical units survive on the basis of corporate subscriptions previously contracted with multinational companies, while some others survive due to the contracts previously signed with the National Health Insurance House, in other words, on the basis of public funding. According to statistics, over 20% of physicians and auxiliary medical staff (21.6% in 2012) and over 80% of pharmacists and dentists are practicing in the private sector.

Public medical personnel are also practising in the private sector and are directing patients towards one or another sector according to personal interest/disease severity/financial status of the patient. Even though many general practitioner offices have been privatized, investments have been minimal in the rural areas so even if these units exist, infrastructure and equipment are deficient and cannot provide quality care.

At territorial level the private medical network is servicing extended areas around Bucharest, in the northwest, northeast and western part of the country, filling in and compensating for the deficits within the public network.

However, private establishments also tend to concentrate in large cities, as well public units, generating significant disparities at regional level. Various factors could contribute to the health professionals territorial disparities as „rural-urban inequities, inadequate medical education systems, migration, public-to-private brain drain and inadequate

payment incentives” (Dussault & Franceschini, 2006).

Other factors such as „quality of leisure, distance to central city areas, average income and presence of a hospital are significant in explaining the probability that at least one physician (specialist or general practitioner) is present in a given town” (Dionne et al., 1987).

The communist authorities through coercive practices strictly controlled medical education and training, migration, as well as the geographical distribution of the health workforce at the territorial level.

Thus, by applying strict compulsory strategies to tie doctors down into the rural areas (mainly through mandatory job allocation at the end of their studies) conducted by the Ministry of Education, doctors were basically forced to practice for a set period (3-5 years) in areas in need, mostly inside the rural network of dispensaries existing in each commune or inside the town hospital network, ensuring, at least in theory, the access of the whole population to healthcare as well as to a balanced territorial distribution of qualified health professionals.

This policy however did not lead to the improvement of health outcomes; in reality, dispensaries were poorly equipped, they had old infrastructure and limited diagnostic methods so patients were referred to hospitals in large cities. Also, not many health workers remain in practice in rural and remote areas after the end of the mandatory length of stay.

Although normal, these changes have had devastating effects at the territorial level, some physicians choosing to practice abroad and others turning to major cities, so many medical facilities in remote or rural areas have become unattractive for health workers and unable to provide medical services.

Although, through health care reform, it was attempted to correct certain deficiencies, giving more weight to primary care services (Scintee & Vlădescu, 2012), their organization has been difficult in the context of shortage of medical personnel, the population being forced again to access hospital services for simple diagnosis or routine investigations. This explains why almost 25% of the population is hospitalized yearly and also the increased expenditures on hospitals (covering 50% of total health expenditures).

The financial difficulties faced by the country have forced health authorities to consider the efficiency of health care activity, meaning reducing the number of hospital beds, merging hospitals and even closure of town and rural hospitals (67 public

hospitals closed in 2011) in order to reduce health expenditure. If the decision to close was justified in the case of some TB and chronic hospitals, located inside former mining areas, the situation is not the same when it comes to town/municipal hospitals which used to serve mountain populations who presently have limited access to different medical units due to: increased distance (sometimes over 60 km), lack of transportation and additional costs. In order to correct the geographical disparities of medical personnel „governments internationally often have used combinations of compulsory service and incentives” (Zurn et al., 2004), different social or financial compensation. Even if the shortage of medical personnel is a big issue for Romania, there is no planning of health care resources in order to assure a balance between demand and supply.

While much is being spent on medical education and training, without any benefit afterwards, Medical Higher Education Schools do not envisage reducing the size of their student population and health legislation does not set a limit on the number of medical graduates (numerus clausus). Most often medical students are recruited by agencies, to practice abroad, after graduation. Also, there is no strategy to reduce health professionals' emigration or to increase their retention in rural areas or small towns.

The lack of financial or non-financial incentives to retain existing health workers in these regions contributed, once again, to the emergence of under-served regions but also to the concentration of physicians in major cities where infrastructure, possibilities of treatment and diagnosis are greater, as well as career development opportunities, at the expense of rural areas.

The healthcare labor market is not a competitive one in Romania. The wages of physicians in the public sector were traditionally kept very low, they being considered as public servants. Average monthly wage for resident doctors is about 200 euro/month; for specialists the amounts range between 300 to 700 euro/month (mass media estimates); and for nurses from 80 to 200 euro/month (according to experience). Moreover, in 2010, due to the economic crisis, all public sector wages, including of doctors, have been reduced by 25%. Also, to reduce public spending, posts were blocked in the public sector and hospitals, as with all public institutions, have not been allowed to hire staff for a period of several years.

The private sector provides higher salaries than the public one and better working conditions but could not compete with the salaries offered abroad - „starting from 2000-3000 euro per month

for resident physicians; and over 5000 euro/month for medical specialists” (Feraru, 2013). They are also facing a lack of personnel, so „the international recruitment of health care professionals became a usual practice in many countries” (Cehan & Manea, 2012).

Although practicing in the private sector has been considered by local health authorities as a better alternative to practicing in the public sector or emigrating, it has not led to significant compensation of the deficit of doctors at territorial level. Moreover, many general practitioners are leaving their offices in Romania preferring to practice in remote, isolated areas abroad, for higher wages and better living conditions, in a more well organized society, “where life is less stressful” (Dumitrache, 2014).

In addition to the many problems saved by the private sector it is understandable that doctors in this sector where mainly directed to the cities and therefore more rural or remote areas are still deprived of primary care.

As long as doctors' wages are low and the medical profession has become unattractive to be practiced in Romania, the situation will worsen especially in isolated rural areas of our country.

Although re-activating communist practices is not desirable, certain retention strategies must be implemented, even more so because the health professional shortage affects not only disadvantaged areas but also large hospitals in major cities. The low correspondence between health care supply and demand generates significant flows of patients to large hospitals to receive quality care. The phenomenon increases the costs of health care and it reduces population addressability to health services. Also, it contributes to overcrowding in hospitals, because greater numbers of patients, to overworked physicians and, ultimately, to patient and doctor dissatisfaction alike.

Given the uneven territorial distribution of health personnel and medical units and the existing gap in health care provision between rural and urban areas, which generates numerous inequities, many population groups are not benefiting from healthcare. Most often, such territorial inequalities in health care provision are strongly correlated with social and material deprivation, respectively, “a state of observable and demonstrable disadvantage relative to the local community or the wider society or nation to which an individual, family or group belong” (Townsend et al., 1987), further bringing into question territorial sustainability. As long as population health status is inversely correlated with deprivation, „the need for health services is

generally assumed to be greater in more deprived communities” (Adams & White, 2005).

The Inverse Care Law assumes that the availability of good medical care tends to vary inversely with the need of the population served (Hart, 1971). Thus, deprived areas generally experience a higher rate of mortality and morbidity, and have fewer resources with the inhabitants facing numerous barriers to access quality healthcare. Conversely wealthy regions are more advantaged and have a healthier population. Geographical proximity or availability of health services is important, since medical care is delivered predominantly by local health professionals.

Relationships between deprivation and availability or access to health services has been considered in numerous studies, some of them confirming the strong correlation between reduced health care access and deprivation (Watt, 2002). Other studies suggest that access should not be combined with other measures of deprivation (Niggebrugge et al., 2005) and, in contradiction to the Inverse Care Law, some research found that geographical proximity to general practices was greater in more deprived areas, compared to more affluent wards (Adams & White, 2005). Certainly, geographical proximity does not necessarily mean

higher addressability or affordability and does not guarantee good quality of health care, but it is a precondition for them.

In Romania, there are few studies that mention the link between health care outcomes, access to health care and deprivation, highlighting that inequalities occurring in population health status are determined not only by the unequal access to health care services but also by other socio-economic factors. The most disadvantaged, from this point of view, is the rural population (Ciutan & Sasu, 2008; Vâlceanu et al., 2012).

However, until now, there was no strategy for health services planning according to deprivation, which takes into consideration the fair distribution of health care resources or opportunities where there is relatively more need.

Deprivation is extended in northern, eastern and south-eastern parts of Romania (mainly plain areas), as higher values of the calculated deprivation index suggest. Also, one can identify areas of deprivation, in the south as in the north-west of the country or in Transylvania (Fig. 3).

These deprived areas are largely overlapping rural areas, with a reduced degree of coverage by doctors, poor geographical access to health care and inequities in health care provision.

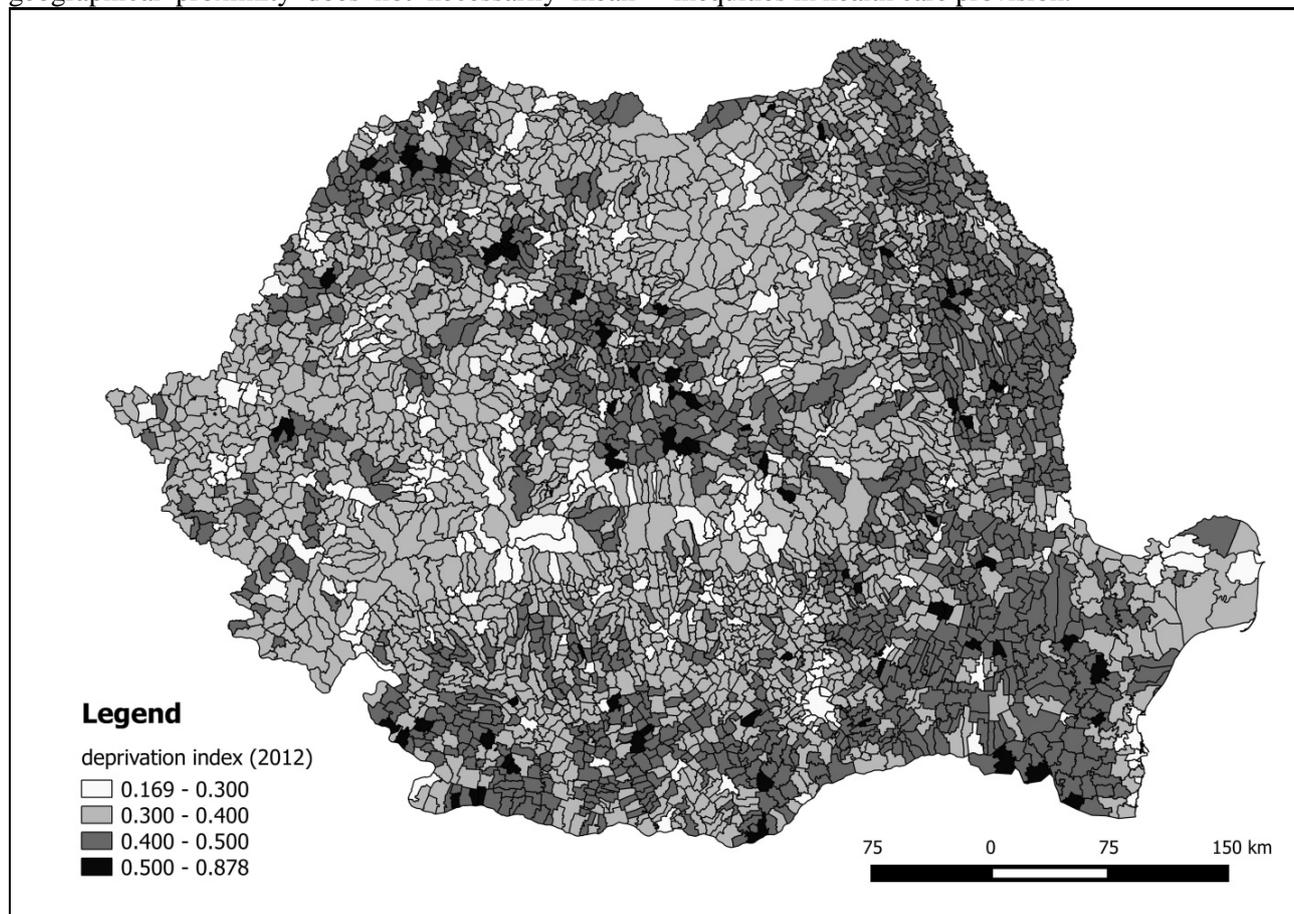


Figure 3. Territorial distribution of Deprivation (2012)

Although some studies show that increasing the medical workforce in a given geographic area may not necessarily improve population health outcomes (Australian Medical Workforce Advisory Committee, 1998), various other factors influencing health status and the lack of health personnel reduce, at least theoretically, the access to health care; this, along with deprivation, will further reduce the quality of life, determining the expansion of underprivileged areas and bringing into question sustainable territorial development. In order to estimate the intensity of the relationship between the composite index of deprivation and the degree of coverage with physicians, the Pearson correlation coefficient was calculated. The result shows a positive relationship between the two variables. However, the value of the correlation coefficient, ($r= 0.245$), is relatively low and it suggests that other factors, such as demographic ones, should be also considered in further analyses.

4. CONCLUSIONS

Health care provision represents an important domain in assessing the sustainability of territories. The degree of coverage with doctors could vary at territorial level depending on many geographic, economic or political factors and it may be linked to other indicators of sustainable development such as geo-demographic ones, health status indicators and employment, education or housing indicators. Unequal distribution of health resources (human and material) at territorial level in Romania has led to the depreciation of health services and to the reduction of population accessibility to health care, having long-term effects on territorial sustainability.

Availability of medical personnel and medical facilities in immediate proximity is not necessarily correlated with a higher level of delivery and it does not guarantee the quality of health services, but it is a prerequisite.

Also, improving access and quality of health services will not necessarily lead to improved health outcomes. In order to improve the population health status, other measures are also required, not necessarily related to health care services.

The implementation of healthcare professionals retention strategies (not only in the country as whole but also in rural or remote areas), will represent a challenge for Romanian government and health authorities, considering that public funds will be reduced. A better planning of health care resources and strategies adapted to the local population needs, taking into account different social, demographic and development factors, could

contribute more broadly to the achievement of the sustainable territorial development goals.

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