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# PERFORMANCE AND SUSTAINABLE OF HEALTHCARE SYSTEMS AND APPROACHES TO ITS MEASURING AND EVALUATING

*PAVLÍNA HEJDUKOVÁ, LUCIE KUREKOVÁ*

## Abstract:

There is a growing interest in the evaluation and measurement of performance of healthcare systems in all developed countries. Measuring and evaluating healthcare system performance is both a theoretical as well as a practical problem with specific characteristics; it is not easy to measure the outputs of the healthcare systems and is not easy to express the outputs in monetary values and the causality between health inputs and outputs is not always certain. This paper defines the possible approaches which are used for measuring and evaluating healthcare systems, discusses the usability of these approaches, and points to some indicators of healthcare performance at the level of international comparison. The paper partially critically reflects selected approaches and highlights the limitations associated with these approaches to measuring and evaluating performance in healthcare systems and it also presents selected aspects of sustainable healthcare in the Czech Republic.

## Keywords:

approaches, healthcare systems, performance, evaluating, measuring, indicators, sustainability

**JEL Classification:** H50, H75, I11

## Authors:

PAVLÍNA HEJDUKOVÁ, University of West Bohemia, Faculty of Economics, Czech Republic, Email: pahejdu@kfu.zcu.cz
LUCIE KUREKOVÁ, University of Economics in Prague, Faculty of Economics, Czech Republic, Email: Lucie.Kurekova@seznam.cz

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## 1 Introduction

Healthcare systems in all countries play a bigger and more influential role in people's lives than ever before. The main goal of health systems is to improve the health of their society. Current healthcare systems have many highly skilled people and better and better technology systems which give the health systems the power and potential to achieve further extraordinary improvements. On the other hand, the new opportunities in the health care sector are not only positive. Many healthcare systems cannot use all of their potential. Healthcare systems can often be considered poorly structured, badly managed, inefficiently organized, and inadequately funded. So it is necessary to manage these systems and evaluate their performance (Hejduková & Kureková, 2016a). Performance measurement and evaluation play an important role in public policy. It can be concluded that the performance measurement and evaluation policies are interlinked areas (Wouter & Bouckaert & Halligan, 2010).

The performance of a healthcare system needs to be seen in a comprehensive way: in the context of a range of socioeconomic, demographic, or political determinants as well as globalization processes (Hejduková, 2015). Cylus & Smith (2013) state, that performance is a more general term than efficiency, and point to the fact that the term "performance" can help to describe how well and successfully healthcare is provided.

Measurement, monitoring, and evaluation of performance are addressed by multinational organizations (OECD, WHO, Eurostat), especially since 1997, when a national accounts system was introduced for some OECD countries. The performance of a health system is understood by the WHO to be a measurement of achievement of the basic objectives (level of outputs) in relation to the amount of resources expended, i.e. the health of the population, the friendliness represented by the non-medical determinants and, last but not least, the fairness and transparency of the system's financing. This ratio is still not in balance due to many factors such as population aging, increased incidence of non-communicable diseases, and increased spending on research and development of new technologies (WHO, 2000).

There is not one single model which is used for evaluating healthcare performance. The reason for this is the fact that the approaches to this problem are constantly in progress. In recent years, the trend is not only to assess the performance of the system in terms of allocation and technical efficiency, but rather from a conceptual point of view.

The performance of a healthcare system primarily includes equity, the quality of care provided; the amount of resources spent on health care, and the availability of health care. The World Health Organization (2000) defines the performance at the level "better health". This concept states that better health is unquestionably the primary goal of a healthcare system. But on the other hand, it must be taken into account that health care can be costly and unpredictable, the mechanism for sharing risk and providing financial protection is important. A second goal of healthcare systems is, therefore, fairness in financial contribution. A third goal – responsiveness to people's expectations in regard to non-health matters – reflects the importance of respecting people's dignity, autonomy, and the confidentiality of information (World Health Organization, 2000). It is very important that not only the financial aspects are evaluated; but simultaneously, a growing emphasis is also being placed on non-financial characteristics – for more, see e.g. Roberts et al. (2003), Preker et al. (2000), Donabenian (1982), or Smith et al. (2008).

## 2 Goal and methodology

The goal of this paper is to present a descriptive analysis of basic questions and the topic of measuring and evaluating healthcare performance in the international comparison. The paper also highlights the trends of health sustainability in the Czech Republic.

The paper provides a basic overview of research activities in these topics in recent decades and lays out approaches to measurement and evaluation of the performance the performance of healthcare systems, including selected indicators. It also discusses the approaches and partially critically reflects and draws attention to the possible limitations of the concepts. The paper also points to the selected research studies in this area and presents the sustainable development goal on health and its monitoring in the future.

The ambition of the paper is to answer the following questions: What approaches are used to measure and evaluate the performance of healthcare systems? What factors affect performance ratings? What are the limitations of selected approaches? What indicators are used in practice for assessing health performance? Research of literature and selected statistical indicators provided the answers to these questions. The data for this paper were mainly taken from WHO data, the OECD Health Data and research and scientific papers.

## 3 Selected approaches to measurement and evaluation healthcare systems' performance

In general, the objective of measuring performance of healthcare systems is to monitor, evaluate, and determine to what extent certain aspects of the health system meet its main goals (Smith & Papanicolas & Mossialos, 2008; WHO, 2016).

Health care performance refers to the maintenance of an efficient and equitable system of health care. Arah et al (2006) mentioned that it is possible to use for performance of health systems the term "health performance". These authors consider this term as a much broader conceptual approach to measuring performance which include non-health care determinants, health care, contextual information to give a clearer picture of population health.

Both the specific indicators and selected approaches to the topic of healthcare system - performance are presented in many forms. We can name, for example, Maaytová (2012) who uses selected mathematical and statistical indicators for various areas of mortality, morbidity, patient satisfaction, and others; Dlouhý (2016) uses mathematical and statistical indicators and model data envelopment analysis with use of data which comes from the OECD Health Statistics; Hejduková & Kureková (2016b) also use mathematical and statistical indicators which come from European Health for All Databases and OECD Health Status; Anand & Barnighausen (2004) used econometric approaches using WHO dataset etc.

World Health Organization (2000) used these indicators, but in the context of healthcare systems' performance, these indicators summarize the three basic parts that need to be monitored and the results of their detailed analyzes which are to be taken into account when assessing the performance of a healthcare system. These parts are the following: better health, responsiveness, and financial contribution. Better health should be the primary goal of healthcare systems (Murray & Evans, 2003; Murray & Frenk, 2000); responsiveness is represented by the subjective non-medical expectations of the population like dignity, confidentiality of personal data, clear

communication, fast access to care, free choice of care provider, quality of environment and basic equipment, and social support (Angelovská & Mašková, 2010; Murray & Evans, 2003); contributions to the healthcare system should reflect the difference in the disposable income of the individual or households (Murray & Evans, 2003).

Some selected indicators solutions: Smith & Papanicolas & Mossialos (2008), Papanicolas (2013), Kelley & Hurs (2006) or University of Ljubljani (2015).

The following are examples of indicators at the level "better health":

- Life expectancy,
- Potential years of life lost,
- Disability-adjusted life expectancy.

The important part at this level of performance is risk factors, which are often mentioned in the context of health status indicators, particularly with increased mortality and morbidity. There are examples of risk factors: drinking water pollution and the level of hygiene conditions, low birth weight, child obesity or child malnutrition, diabetes, hypertension, overweight or obesity, conception of alcohol and tobacco etc. (WHO, 2012).

The following are examples of indicators at the level "responsiveness":

- Measuring patient experience,
- Measuring patient satisfaction,
- Euro Health Consumer Index.

The following are examples of indicators at the level "financial contribution":

- Total expenditure in USD per capita,
- Total expenditure as % GDP,
- Government expenditure as % GDP,
- Private expenditure as % GDP.

**Selected indicators at the level "better health"**

These indicators are focused primary on health outputs. The indicator "Life expectancy" refers the number of years that an x-year-old person may experience, but assuming constant mortality rates as expected at the time of the evaluation. According to Suzuki (2013), this indicator considers the same mortality rate in the population as well as in the future. The value of this indicator is based on mortality tables. It is therefore determined by the ratio of deceased and living people in each age group (WHO, 2006; OECD, 2017). However, it can be influenced by a number of factors such as the quality and level of health care and lifestyle provided, including dietary habits, the economy of the area under consideration, the environment, or the level of crime (OECD, 2017). This indicator is often used in these two variations: 1. Life expectancy at birth which shows the expected life expectancy of the newborn in the mortality pattern for the given year of birth; 2. Life expectancy at age which shows the mortality rate in the population in all age groups above the age limit (WHO, 2006). The indicator "Potential years of life lost" is a summary measure of premature mortality, providing an explicit way of weighting deaths occurring at younger ages, which may be preventable. It is measured in years lost per 100 000 inhabitants (men and women) aged 0-69 (OECD, 2016).

**Selected indicators at the level "responsiveness"**

Indicators at the level "responsiveness" are focused more on areas of healthcare services that are not directly related to health; they are an important factor for the success and efficiency of the care provided. However, the aggregation of user-friendliness (responsiveness) indicators into different areas is highly problematic (Barták, 2016).

The experience of patients and their families or friends is considered to be a key component of the quality of health care (De Silva, 2013). Three types of models are used for measuring and evaluating healthcare performance at this level: 1. Quantitative methods mainly produce numerical data, which are relatively easily statistically analyzed and compared. A questionnaire should be mentioned as the basic tool for obtaining quantitative data. Questionnaires yield much data at a relatively low cost; 2. Qualitative approaches provide a deeper understanding of patient behavior and the importance they attach to individual experiences. Primary tools include a focus group or interviews. There are also many innovative methods such as mystery shopping, photo voice, guided tours; 3. Mixed models include the combination of quantitative and qualitative approaches which brings a wider perspective to the whole issue, and this model can determine and explain convergence of data (La Vela & Gallan, 2014; Hudak & Wright, 2000). The indicator Euro Health consumer index (EHCI) is used for international comparison of health care systems with an emphasis on the quality of health services. EHCI consists of six subparts: patients' rights and information, waiting time for treatment, results of treatment, range of provided services, prevention, and pharmacy (Björnberg, 2016).

**Selected indicators at the level "financial contribution"**

These indicators of performance can be named "economic indicators of performance", which solve health care financing (Dlouhý, 2016) – measured as a share of total health expenditure on the gross domestic product, a share of government health expenditure on the gross domestic product, a share of private health expenditure on the gross domestic product, or expenditure per capita in USD. Also, in these indicators we can find many differences, not only in concrete data, but also in form of expenditure (it depends if the payment is in the form of taxes or insurance etc.) and how big of a role the state, public sector householders, private insurance, or direct payment of patients plays in funding.

## 4 Sustainable Development Goal on Health in the Czech Republic

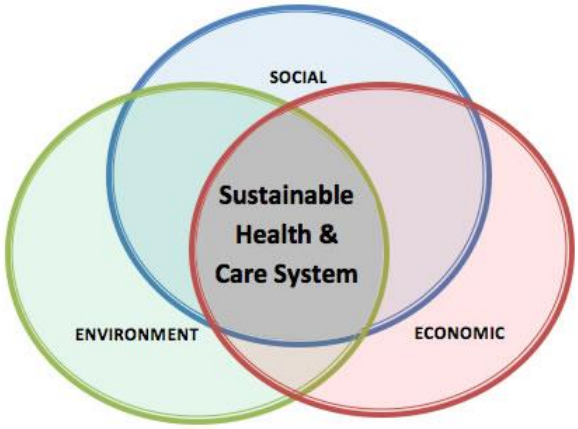
Performing of health care systems is necessary to solve in connection with sustainability. The modern countries have to have increased interests in the performance of their health care system and have to consider their effective functioning in the future. In other words, they have to target on the sustainable health care.

Sustainability is not a new phenome. "Sustainability" is the term which has received considerable attention since the late 1980s (Olsen, 1998). Sustainable Development Unit (2017) claimed that it is easy to imagine a sustainable health and health care system where three basic limitations: financial, social and environmental resources exist. The challenge is to change the current approach to delivering health care: to provide better quality care and improve public health with regard to natural resources and without causing severe ecological damage – for more see Fig. 1. Other definition of sustainability in connection with health is used by UNICEF (1992) proposed by

the International Development Management Centre, University of Maryland – "the ability of the system to produce benefits valued sufficiently by users and stakeholders to ensure enough resources to continue activities with long-term benefits". How names Olsen (1998, p. 289) "A health service is sustainable when operated by an organizational system with the long-term ability to mobilize and allocate sufficient and appropriate resources (manpower, technology, information and finance) for activities that meet individual or public health needs/ demands".

Fig. 1: Sustainable Health




Source: Sustainable Development Unit (2017)

The health has the centrally position in sustainable development around the world, the trends in sustainability of heath sector were adopted in document "Transforming our world: the 2030 agenda for sustainable development". This document builds on a stratifying framework "Strategic framework Czech Republic 2030". These key factors follow the results of the performance evaluation of healthcare systems in the modern world (see previous chapters).

Key factors which are presented in this document are following:

- reduction of inequalities in individual population groups,
- more support of the prevention,
- creation of health promotion centers,
- effective health protection supported by public budgets,
- investing in the development of healthy literacy,
- healthy environment and promoting healthy lifestyles,
- more support of the medical disciplines associated with aging populations,
- increasing the importance of spa,
- universally accessible quality public and adequately funded health care,
- adaption of the health care on new risk trends,
- statistical analysis and setting up innovation processes in the health care,
- new policies for health.

We can see many marked health inequalities in the Czech Republic (also in other developed countries). The example is different life expectancy due to education and the main goal in this part of health policy is to improve the health of all inhabitants (Ministry of Health, Czech Republic, 2014).

Health care system could not be only the system for sick people but it is necessary to support the health during all life, it means long-term systematic approach and emphasis on prevention. The priority of the health care system should be to reduce the number of sick people.

New centers for support of health should serve for more intensive use of preventive examinations and screening examinations.

The implementation of healthcare system performance indicators is played by funding, primary from public budgets. By the fact that there are public health insurance companies in the Czech Republic, the important role will have these insurance companies and their funds of prevention. It is necessary to use these resources more effectively.

In recent years, financial literacy has played a more and more important role in decision making. It is important to lay down the basics for health literacy in the health sector. This term does not mean that the patient will have the comparable information like the medical doctor for making decision, but the patient will be able to orient themselves in the complex social and healthcare system. The responsibility for your own health and for healthy lifestyle is also important.

Crucially, it is necessary to reduce the burden on people's health and risk factors. For example, we can name pollutant emissions from domestic heating using solid fuels, diesel and petrol engines and other health risks in air, water, soil, food, etc. The state will continue to restrict tobacco use, promote healthy nutrition and sport activities.

Regarding the aging of the population, emphasis is placed on the promotion of sustainable and healthy aging work from the beginning of their careers. It is necessary to prolong the active part of life (the length of life in health) and to support the medical branches as geriatrics etc. Spa is necessary to perceive as an interdisciplinary field and use it as prevention and aftercare.

Main challenge of health system is sustainable and institutional support of public health system and prevention of sickness. To ensure sustainable health care it requires not only sufficient financial resources but also personnel resources. At first The Czech Republic should support the faculties of medicine and has to inform about possibilities of study, branches and attestations for quality health personnel resources. The Government of the Czech Republic (2017) mentioned that the better situation can be obtained not before 2025.

Health care system must be prepared for new problems like infection, an increase of mental illness in the society etc.

To improve health sustainability, health data and statistics, including health indicators, need to be improved and identified, both at international comparison, at national level, at region level and at municipal level. Here we must not forget the new technologies like e-health, e-recipes which is necessary to use more intensive in the future.

Health policy-making is not only the prerogative of the health sector, but it also intervenes in other areas, the non-profit and the private sector, scientific and educational institutions, public administrations and individuals (Government of the Czech Republic, 2017).

## 5 Discussion

The topic of this paper is currently and frequently discussed on an international level in connection with sustainable development. This is due to globalization tendencies, economic and social problems around the world. Discussions on the topic are now taking place in terms of public policies, private and public sector, individuals and of course of research studies in the academic sphere.

There are many approaches for the health care performing and the assessment of health performance is very important challenge by reason of the fact that the health care is an application field with specific context and characteristics.

The most commonly used indicators describing the state of health of the population include indicators of morbidity and mortality. In order to allow an international comparison, most of these indicators are presented in a standardized form that removes the distortive effects of the age structure of the population. It is advisable, of course, to assess them in connection with other demographic and risk factors. Healthcare systems also include numbers and coverage of health care by qualified healthcare professionals (i.e. doctors, nurses and nurses, obstetricians, dentists, lab workers, and pharmacies) among the indicators. Improving coverage density by professional medical staff is also one of the primary goals of the WHO. The data is mostly obtained from surveys and censuses, as well as data provided by medical facilities (WHO, 2011). Economic Indicators of performance also play a very important role in performance of healthcare systems, but it must be taken into the account that healthcare markets are very particular, and in comparison with other markets have many differences considering the other factors of the measurement and evaluation of the performance.

There are many specific approaches to measure and evaluate the health care performance and many indicators which are used in theory as well in practice. The available sources of data for comparison of healthcare systems' performance come primary from OECD, WHO, Eurostat, and national statistics of concrete country dataset. Dlouhý (2016) states how the choice of indicators is in the hands of a researcher, and depends on the concrete aim of the study. The authors of this paper have to point to another important fact which is necessary for choosing analyzed indicators – the method which authors want to use for their own calculation and comparison at the level of international data. There is no question of good or bad indicator, it is a question of comparability of the indicators.

The World Health Report 2000, which was created by WHO (2000), and which is used in this paper as a basic source for classification of performance indicators, is one of the most comprehensive approaches to evaluate performance of national healthcare systems. The other interesting research study by Mackenbach & McKee (2013) points to risk factors such as tobacco, alcohol, food, and the number of treatments etc. The Health Consumer Powerhouse (2015) presents the result of a study by the Euro Health Consumer Index, in which was analyzed, and compared the key values in health care, taking the patient point of view. Other research studies were mentioned in the paper – see for example Dlouhý (2016), Hejduková & Kureková (2016a, 2016b) or Smith & Papanicolas & Mossialos (2008) etc.

There are many factors and limitations which affect healthcare performance, and therefore, assessment indicators. The first one is the fact that no universal methodology for measuring,

evaluating, and comparing performance of national and also regional healthcare systems exists. The other problem is availability of comparable data, but there are also other very important facts – social, political, culture and economic context of the countries, distorted information in qualitative research, problems of weights determination of specific indicators, etc. The involvement of governments into healthcare systems is justified on the both equity and efficiency, and this fact is necessary to be accept in the future.

An international comparison of healthcare performance can help public policy decisions in developed countries concerning future trends of healthcare in many aspects. The researchers have to be careful in the analysis and interpretation of results and also take into account the fact that there are many aspects of healthcare systems.

## 6 Conclusion

The reasons for the increased interest of the healthcare system include the primary health care services, aging populations, market failures, problems with quality, medical errors, lack of accountability, inequality, etc. (OECD, 2004; Smith, 2002, Institute of Medicine, 2001). Health is determined by many interdependent factors, so it is a very difficult and complex problem. In addition, despite the variety of healthcare systems to be found in modern countries, all countries have to find ways of sustainable in the longer term, and it is necessary to measure and evaluate indicators of performance.

Measuring and evaluating of the healthcare systems performance, i.e. achieving the highest level of objectives with limited resources, in the context of demographic and socioeconomic determinants, is the basic pillar of health care reforms. It is likely that the economic maturity of the states and the level of spending on health promotion will largely depend on the performance of the system. The amount of funds spent also points to the level of justice in the health system, and how it is analyzed has a considerable influence on the outputs and a certain relationship to their helpfulness.

According to WHO (2000) “health is the defining objective for the health system. This means making the health status of the entire population as good as possible over people’s whole life cycle, taking account of both premature mortality and disability”.

No measuring is perfect for the purpose of summarizing the health of a population; each way of estimating violates one or another desirable criterion (Murray & Salomon & Mathers, 1999).

The authors recommend to use composite indicators, larger datasets, and econometric methods. Researchers must be careful in determining concrete results and of their interpretations. It can have tremendous impacts on practical applications because of the fact that some results can be distorted.

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