

FINAL REPORT

'The Role of Access to Health Care in Health Inequalities in Hungary'

Project number: K 119574

Period: 01. 10. 2016. – 31. 03. 2020.

Leader: Uzzoli Annamária

Participants: Bán Attila; Beke Szilvia; Kovai Cecília; Pál Viktor; Vitrai József

The primary objective of this final report is to present and summarize the most important results of our three and a half years course research project. The aims of this report are the following: 1) describe theoretical and methodological framework of the research, 2) summarize the consequences of all research tasks, 3) synthesize the knowledge of our research activities, 4) suggest some suggestions for evidence-based and informed decision-making.

1. Introduction – Theoretical Framework

Access to health care is generally defined as access to a health service or a health provider, thus defined as the opportunity with which consumers or communities are able to use appropriate services in proportion to their needs (Daniels, 1982; Whitehead, 1992). It is also defined as the use of health care, qualified by need for care (Waters, 2000). Here, access may be conceived as the interface between potential users and health care resources, and would be influenced by characteristics of those who supply as well as those who utilise the services (Penchansky and Thomas, 1981). It can describe potential users' ability to use health care services when and where they are needed in time and in space (Aday and Anderson, 1981). Availability can help to define the supply of services in relation to needs – whether there are adequate services to meet the healthcare needs.

There is a growing literature devoted to measuring and understanding geographical patterns of health care as well as health outcomes (Cromley and McLafferty, 2011; Skinner, 2012). Access to health care, especially when used to reflect on health inequalities, should look at the resource allocation in relation to social and health needs as well as looking at geographical distribution of services linked to measures of needs and access (Braveman, 2003). That is the main reason to take into account at the same time spatial factors (e.g. geographical location, travel distance) as well as non-spatial factors (e.g. socio-economic status, gender, age) which are interrelated to each other and influence as critical barriers access to health care. The term spatial accessibility is used to refer to the combination of availability, acceptability, appropriateness, affordability of health demand and supply (Gulliford et al., 2002; Samuels, 2005; Shah et al., 2016). In addition to differences in patients' needs, spatial accessibility may be due to characteristics related to the health care system (demand and supply drivers), including the volume and distribution of human, physical and financial resources (Brezzi and Luongo, 2016).

There are significant differences between urban and rural areas, or socio-economically disadvantaged neighbourhoods tend to have relatively poor access to resources that promote health, such as access to health care (Marmot, 2015; McIntyre et al., 2009; Wilkinson-Pickett, 2010). While important for demonstrating increasing accessibility problems among countries and within a country, there is less of the research on access to health care services focused on local level.

Accessibility of health care services is a key dimension in health inequality. Here the concept of 'health care access' is inherently multi-dimensional integrating both spatial and non-spatial factors. It is also linked to the theory of fundamental causes: the consequences of social stratification and structural inequalities can result health inequalities and not exposure to intermediary risk factors (Link and Phelan, 1995).

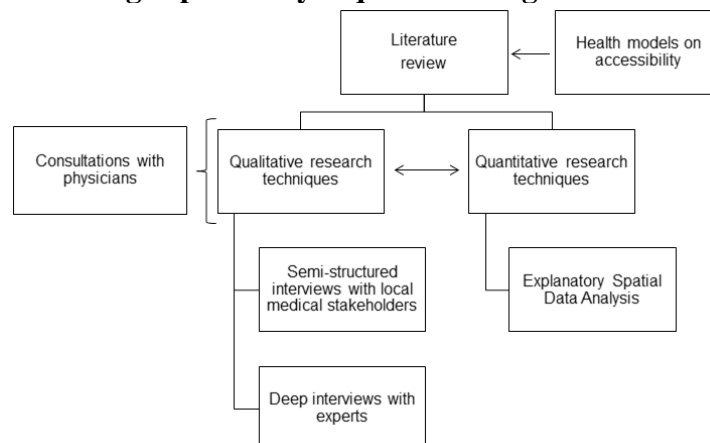
2. Methodological Framework

In this research, the concept of spatial accessibility regarding availability is basically applied to analyse health inequalities and its regional distribution in Hungary. We view access to health care services as resulting from the interaction of determinants pertaining to characteristics of individuals (e.g. the place where they live, their socio-economic status), of health care services (e.g. quantity, location of facilities) and of regional/geographical effect (spatial distribution measuring by regional analysis methods and explanatory spatial data analysis). The basic questions of our research were:

- 1) What are relevant barriers and supporting factors of access to adequate health care services regarding epidemiologically important non-communicable diseases presently in Hungary?
- 2) What are the features of access to health care and its geographical distribution?
- 3) How can measures of decision-making influence reducing health inequalities and improving conditions of access to health care in Hungary?
- 4) What is the specific role of spatiality in health inequalities and conditions of access to health care?

Methodologically, our examinations were integrated both of quantitative and qualitative techniques as mixed methods (Figure 1). Using mixed methods to evaluate health services is increasingly often applied in health research (Király et al., 2014; Tariq and Woodmann, 2013; Wisdom and Creswell, 2013).

Figure 1: Using explanatory sequential design in mixed methods



Source: own work based on methodological framework of this research

To measure Hungarian health inequalities and its regional distribution, we applied morbidity and mortality data of a cardiovascular disease such as acute myocardial infarction (AMI). It is one of relevant chronic diseases and leading death causes in developed countries which gives comprehensive information about the short-term and long-term survival chances. To define conditions of access to health care we created a local case study based on semi-structured interviews with medical stakeholders in cardiac care (N=54). The spatial pattern of this scientific fieldwork was in different health services and providers of Békés county. To analyse the role of decision-making in health inequalities and accessibility, we made content-analysis in Hungarian strategic documents, and we also prepared deep interviews with experts (N=21). To summarize and synthesize all results of the research, we some marked viewpoints in our suggestions for evidence-based and informed decision-making.

(See more details on applied methods in our official website:

https://egeszseguyihozzaferhetoseg.files.wordpress.com/2017/09/zaro_jelentes_honlapra-1.pdf

3. Results on coherence between accessibility and spatiality regarding health inequality

The main scope of the first half of this research was to study regional distribution of the Hungarian health inequalities regarding AMI morbidity and mortality as well as its cardiac care.

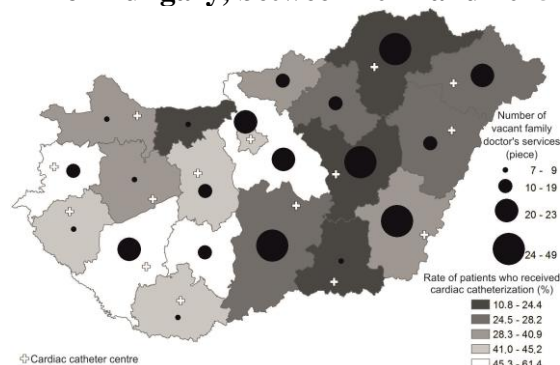
Here are the most important results of our quantitative analysis.

There is a paradoxical consequence in improving cardiac care in the country which is based on the following facts. Firstly, there was a continuous improving tendency in AMI mortality in Hungary from the beginning of the 2000 years. It could result that the Hungarian AMI mortality rate decreased with almost 50% between 2005 and 2015. Secondly, there are significant differences in AMI mortality based on gender distribution: male AMI mortality rate is double of female AMI mortality rate. Thirdly, improving tendency from the middle of the 2000s has gone together with a huge infrastructural investment in health care: new cardiac catheter centres were founded in Hungary which could result better short-term chances. Fourthly, improving AMI mortality rate, there is a high number in AMI morbidity (incidence) in every year which is coupled with marked spatial inequalities within the countries.

There are significant differences among the different parts of the country according to AMI morbidity and mortality (Figure 2, Figure 3). The scale of these inequalities is influenced by changes in time, spatial distribution and gender balance. Lower level of AMI mortality rate can be detected in the neighbourhood of cardiac catheter centres. Despite of this fact there are some counties where opposite situation can be experienced (e.g. case study area of Békés county). In other words, there is higher level of AMI mortality rate in the vicinity of cardiac catheter centre of these counties.

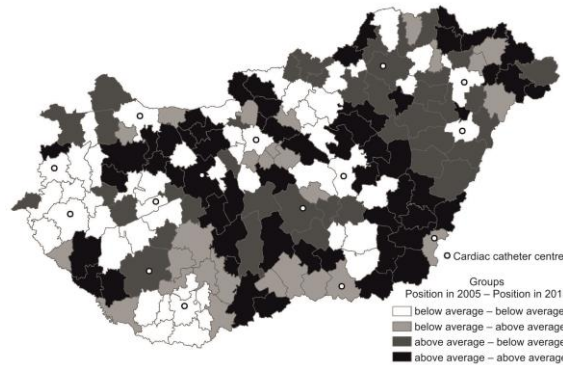
The spatial pattern of our local case study was in Békés county, where a contradictory situation can be experienced in cardiac care. On the one hand, new cardiac catheter centre was founded in Gyula in 2013 which could result increasing number of AMI cases treated by cardiac catheterization in the last years. On the other hand, improving access to AMI care could not result decreasing tendency in AMI mortality yet (especially among women).

Figure 2: Morbidity data of acute myocardial infarction in the counties of Hungary, between 2012 and 2015



Source: own work based on quantitative analysis of this research

Figure 3: Mortality rate of acute myocardial infarction compared to the national average in Hungary at micro-regional level, 2005, 2015



Source: own work based on quantitative analysis of this research

Here are the most important results of our qualitative analysis.

Firstly, the supporting factors are related to the improvement of availability (e.g. founding new ambulance care centres), the infrastructural investments (e.g. founding new PCI centres), and to the development of patient-centred health care (e.g. strengthening primary health care or the cooperation between primary health care and out-patient care). Secondly, the experiences of interviews also could highlight the most important barriers in access to health care, as you can see in this word cloud (Figure 4). These are for example, geographical distance, lack of material and human resources, lack of capacities, weak education which can influence health behaviour, low level of health literacy which can influence healthy lifestyle.

In addition, it is still worth mentioning that the role of difficulties or barriers in access to health care depend on different phases of cardiac care. In other words, barriers significantly differ in pre-hospital, hospital and post-hospital phases of cardiac care (Figure 5). Especially in peripheral areas, for those who living in small villages, the conditions for prevention and health care for a healthy lifestyle are less insured. The lack of local opportunities to support the successful lifestyle changes and their limited availability is determinative in urban-rural relation. Local conditions in social norms and healthy behaviour completely differ in cities and villages, which can significantly influence the efficiency of national prevention programs.

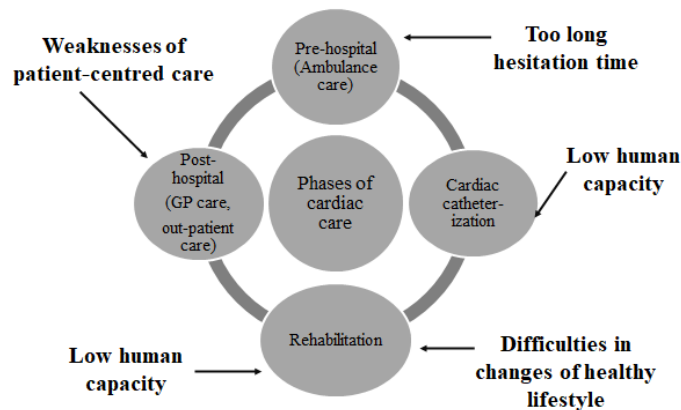
Figure 4: Barriers in access to cardiac care



Source: own work based on results of semi-structured interviews of this research

Here are the most important conclusions of our examinations in the first half of this research (Table 1). Highlighting conclusions based on regional aspect, we can declare that there are remarkable regional inequalities at micro-regional level in Hungary. Increasing regional inequalities mainly affect female mortality. Spatial pattern of morbidity and mortality data is based on Western-Eastern gradient and core-periphery relation. The role of geographical distance and its subjective evaluation depends on socio-economic inequalities.

Figure 5: Barriers in access to different phases of cardiac care



Source: own work based on results of local case study of this research

Table 1: Main conclusions of the examinations in the first half of the research

Viewpoint	Main conclusion
Theoretical	<ul style="list-style-type: none"> - There is a wide range of different approaches of health inequalities which are not sharply separated from each other - Different health models and their results can complete each other
Methodological	<ul style="list-style-type: none"> - There are a lot of advantages and disadvantages of quantitative and qualitative methods - Examination of a multidimensional phenomenon such as health inequality and accessibility is suitable to apply mixed method
Professional	<ul style="list-style-type: none"> - Chronical diseases can reduce quality of life and ability to work among middle-aged population - Role of gender distribution is increasing in health inequalities - Efficiency of health care depends on timely interventions - Weaknesses of integrated health care can become an influencing factor in health inequalities
Regional	<ul style="list-style-type: none"> - Infrastructural medical investments in cardiac care can increase short-time survival chances - Spatial distribution of new cardiac catheter centres can improve availability - Geographical distance has a relative role in accessibility – for individuals it can influence long-term survival chances

Source: own work based on quantitative results of local case study of this research

The most important conclusions of the examinations in the first half of this research have formed the basis of the scientific activities in the second half of the project.

4. Opportunities to reduce health inequalities by improving access to health care based on the principles of fairness and justice

The main scope of the second half of this research was to study the background mechanisms in the process of decision-making in the Hungarian health policy with the technique of content-analysis and deep interviews with experts.

Here are the most important results of our content-analysis.

In the latest years, the concept of place-based re-organization in health care could support improving conditions in access to health services. The question is still remaining open whether the regional distribution of the Hungarian health care system can be territorially fair but also economically rational. The role of spatiality especially prevails in spatial planning to improve health conditions and to re-organize health care system in Hungary. Improving the conditions of health means to develop the opportunities of health promotion locally. Re-organizing health care system means to validate the aspects of territorial supply obligation in

organizing patient-pathways. Community-based health promotion and patient-centred health services has primary role in prevention in geographically peripheral areas. Deprivation is one of the relevant factors in barriers of access to health care. This is the main reason that the geographical and social distance is growing between patients and health care services in socio-economically disadvantaged regions of the country.

Here are the most important results of our deep interviews with experts.

Expert interviews drew attention to the paradoxical role of availability and accessibility in policy making. Accessibility barriers to health care are mainly financial, availability and socio-cultural barriers. Increasing lack of capacity and workforce in healthcare system lead to a new type of health inequalities in Hungary, resulting in a widening health gap between the upper and lower deciles of society. It is partly a matter of value choice that in health policy making to what extent cost-effectiveness and / or social justice efforts are pursued. Summarizing all outputs of expert interviews shows the relevant role of geographical/regional conditions in health inequalities (e.g. place-based resource allocation, horizontal cooperation between health services, strengthening spatial planning in health care, improving distance and time conditions in availability).

All outputs of the second half of this research showed that the place of residence in itself is one of the relevant major factors of health inequalities and conditions of accessibility.

5. Synthesis

The most important consequences and facts can lead to make a synthesis of all results and outputs. This synthesis also integrates theoretical and methodological framework of different case studies which can strengthen synergies among different work packages of this research project (Table 2).

Among synthesized results, we highlight those ones which have marked geographical/regional aspects. The role of geographical location is appearing in distance between residence and health care institutions as well as regional distribution of socio-economic inequalities. Moreover, the supporting or barrier factor of availability primarily prevails in geographical distance. However, improving availability does not necessarily mean improving accessibility in the disadvantaged regions. In these regions geographical distance is increasing between patients and health services because socio-economically disadvantaged position is a barrier factor in accessibility.

Based on synthesis of all results and outputs of this research we are briefly responding to our origin basic questions.

What are relevant barriers and supporting factors of access to adequate health care services regarding epidemiologically important non-communicable diseases presently in Hungary?

Conditions of access to health care depend on prevalence and regional distribution of different chronic non-communicable diseases. However, conditions of access to health care also vary according to different phases and types of health care. Our research is based on a case study to analyse prevalence and regional distribution of one of cardiovascular diseases such as myocardial infarction. Many results of this research are focusing on this disease and its type of cardiac care, but all outputs of the project are suitable to generalization regarding health inequalities and access to health care.

What are the features of access to health care and its geographical distribution?

Generally, we can declare there is relative equality in access to cardiac care based on all experiences of this research. Huge medical infrastructural investments are realized in the

Hungarian cardiac care in the latest 10-15 years which could balance their spatial distribution within the country. These investments could result sharply increasing number of cardiac catheterizations. It has gone together with improving availability, but it may not necessarily improve accessibility as well. It means, improving conditions of availability should go together with improving conditions of accessibility too.

Table 2: Synthesis of all results and outputs of this research

Aim of examination	Applied method	Main result	Regional aspect of main result	Suggestion
Case study 1: define the role of access to health care in health inequality	Preliminary research Technical literature Desk research	Barriers in access to health care generally mean lack of opportunity for better health care	Role of geographical location appears in a complex way	Reducing health inequalities should focus on geographical locations where the greatest social benefits can be achieved
Case study 2: examine coherence between accessibility and spatiality regarding health inequality	Quantitative technique (regional analysis method, explanatory spatial data analysis)	Complexly paradoxical consequences of improving accessibility	Increasing regional inequalities and deepening health gap within the country	Evidence-based decision-making needs more scientific results based on adequate data base
Case study 3: explore local conditions of access to health care (barriers and supporting factors)	Qualitative technique (semi-structured interviews with local medical stakeholders)	There are weaknesses in organizing rehabilitation care	Role of geographical distance is strengthening in subjective evaluation	It is important to strengthen health communication and health promotion in Hungary
Case study 4: discover the role of decision-making in reducing health inequality and improving access to health care	Content-analysis Deep interviews with experts	There is a gap between regulation on health care and real process of operating health care	Territorial supply obligation is based on regulation, but it is contradictory in daily routine	It is required applying territorial supply needs in optimizing supply-demand

Source: own work based on all results and experiences of this research

How can measures of decision-making influence reducing health inequalities and improving conditions of access to health care in Hungary?

Hungarian regulation gives comprehensive conditions as rights in access to health care. Despite this equality, there are difficulties in accessibility socio-economically as well as spatiality too. There are some areas in the country touched by deprivation and other socio-economic disadvantages with the result of larger exposure of different health risks and barriers in access to health care. The fact is that efforts for improving conditions in access to health care, giving more rights and realizing spatial justice in decision-making are existing in the current regulation and strategic framework in Hungary. In the latest 30 years, there were many measures for increasing efficiency and rationalized resource allocation in health care as well as measures for creating the principles of justice and fairness.

What is the specific role of spatiality in health inequalities and conditions of access to health care?

Geographical location similarly to geographical distance has primarily role in health inequalities as well as in accessibility. Firstly, geographical concentration of health care institutions may influence availability with the result of complex disadvantages of peripheral regions. Secondly, geographical distance has a relative role based on objective and subjective factors. Objectively, it should not appear as barrier in availability based on an optimal

resource allocation. Subjectively, geographical location is at a long distance from health care institutions means more barriers in accessibility and availability based on patients' evaluation. Thirdly, relative role of geographical distance is appearing as a challenge for local population living in inner and geographical peripheries or in borderline areas. Fourthly, in geographical location with small villages touched by deprivation patient-centred health care – especially in prevention and health promotion as the part of primary health care – is missing or has many weaknesses. Fifthly, typical spatial pattern of health inequalities in Hungary (Western-Eastern gradient, core-periphery relation) can influence regional distribution of material and human resources in health care.

The novelty of the project is based on using mixed method to analyse regional distribution of health inequalities in Hungary. It is still worth mentioning that results and outputs can contribute to create a geographically specialized discussion on health inequalities especially in the context of Eastern Central Europe.

6. Suggestions

Here are the most important findings based on the synthesis of this research.

- Geographical location and geographical distance show determinative spatial role in health inequality and accessibility.
- Living in geographical periphery implies worse accessibility in complex way.
- Role of availability in accessibility depends on patients' subjective evaluation.
- Geographical proximity does not necessarily mean better conditions in accessibility, and stronger professional cooperation between health services.

The most important findings can help us to suggest some suggestions for evidence-based and informed decision-making. Among suggestions we highlight those ones which have spatial relevance or contribute to solve regional differences of health inequalities in Hungary.

1. It must be emphasized horizontal aspects in developing integrated health care based on inter-sectoral cooperation: It means strengthening cooperation between different health care providers as well as other providers at different geographical areas/levels.
2. It is necessary integrating urban-rural context into the framework of health communication and health promotion: There are significant differences in lifestyle and local facilities in active life between urban and rural environment. It should take into account in health care development strategies as well as in community-based health promotion programs.
3. It is important to develop patient-centred health care: This approach appears especially in preventive health care in peripheral areas. For example, it is possible to provide mobile network for screening for diseases among local population.
4. It should professionally and horizontally extend the framework of primary health care: Developing the community of General Practitioner's services can help to make more close cooperation between doctoral and non-doctoral network at settlement or micro-regional level.
5. It is also emphasized geographical aspects of resources allocation: Regional optimization may base on spatial distribution of medical resources.

7. Limitations and some opportunities for further research

Our research also has certain limitations. Based on in-patient care data, we could not compile such a morbidity database that could have been comparable with mortality database. We could not make a difference between AMI Stemi and Non-Stemi cases in mortality statistics, although, it has significance in cardiac rehabilitation. Patients' socio-economic status could only be indirectly predicted from statistical data. Interviews with patients could

not be extended to their relatives, although they play a key role in the success of long-term lifestyle changes, e.g. in long-term survival chances.

Despite these limitations, this research provides a methodologically complex perspective on examining accessibility with its spatial factors in health inequalities. In the future, similar research project can be adapted in examination in other chronic diseases such as ischaemic heart diseases, stroke, breast tumour etc. Complex methodological framework based on applied mixed method is suitable for organizing local case studies. It is current to investigate how COVID-19 pandemic and its consequences influence health inequalities in the future.

8. References

1. Aday, L. A.–Andersen, R. A. (1974): A framework for the study of access to medical care. *Health Services Research*, 9: 208–220.
2. Braveman, P. A. (2003): Monitoring Equity in Health and Healthcare: A Conceptual Framework. *Journal of Health, Population and Nutrition*, 21(3):181–192.
3. Brezzi, M.–Luongo, P. (2016): Regional Disparities In Access To Health Care: A Multilevel Analysis In Selected OECD Countries. *OECD Regional Development Working Papers 2016/04*. OECD Publishing, Paris. 21 p.
4. Cromley, E. K.–McLafferty, S. L. (2011): *GIS and public health*. – New York: Guilford Press. 503 p.
5. Daniels, N. (1982): Equity of Access to health care: some conceptual and ethical issues. *Milbank Memorial Fund Quarterly*, 60:51–81.
6. Jánosi, A. (2019): Adatok a szívinfarktus miatt kezelt betegek ellátásának helyzetéről. *Nemzeti Szívinfarktus Regiszter 2014-2018*. *Cardiologia Hungarica*, 49:249-54.
7. Király, G.–Dén-Nagy, I. –Géring, Zs.–Nagy, B. (2014): Kevert módszertani megközelítések. Elméletek és módszertani alapok. *Kultúra és Közösség*, 5(2): 95–104.
8. Link, B. G. – Phelan, J. (1995): Social conditions as fundamental causes of disease. *Journal of Health and Social Behaviour*, Vol. 35, 80-94.
9. Marmot, M. (2015): *The Health Gap – The Challenge of an Unequal World*. Bloomsbury Press, London. 400 p.
10. McIntyre, D.–Thiede, M.–Birch, S. (2009): Access as a policy-relevant concept in low-and middle-income countries. *Health Economics, Policy and Law*, (4): 179–193.
11. *Nemzeti Szívinfarktus Regiszter 2019*. (<https://ir.kardio.hu/ir/fooldal>)
12. Penchansky, R.–Thomas, W. J. (1981): The concept of access: definition and relationship to consumer satisfaction. *Medical Care* 19(2): 127–140.
13. Samuels, G. (2005): Availability, Accessibility and Affordability. *The Challenge of Diseases of Poverty*. <http://www.who.int/intellectualproperty/events/OpenForumGillSamuels.pdf?ua=1>
14. Shah, T. I.–Bell, S.–Wilson, K. (2016): Spatial Accessibility to Health Care Services: Identifying under-Serviced Neighbourhoods in Canadian Urban Areas. – *PLOS ONE* 2016/December. 22 p.
15. Skinner, J. (2012): Causes and Consequences of Regional Variations in Health Care. In: Pauly, M.–McGuire, T.–Barros, P. (eds.): *Handbook of Health Economics*. Volume 2. Elsevier, North Holland. 1152 p.
16. Tariq, S.–Woodman, J. (2013): Using Mixed Methods in Health Research. *Journal of the Royal Society of Medicine Short Reports*, 4(6).
17. Waters, H. R. (2000): Measuring equity in access to health care. *Social Science Medicine*, 51: 599–612.
18. Whitehead, M. (1992): The concepts and principles of equity and health. – *International Journal of Health Service* 22(3): 429–445.
19. Wilkinson, R.–Pickett, K. (2010): *The Spirit Level – Why Equality is Better for Everyone*. Penguin, London.
20. Wisdom, J.–Creswell, J. W. (2013): *Mixed Methods: Integrating Quantitative and Qualitative Data Collection and Analysis While Studying Patient-Centered Medical Home Models*. PCMH Research Method Series, No: 13-0028-EF. 8 p.