



# Health Expenditure Dynamics in Serbia 1995-2012

Mihajlo B. Jakovljević

Department of Pharmacology and Toxicology, Faculty of Medical Sciences,  
University of Kragujevac, Kragujevac, Serbian

Global massive research and development (R&D) investment by the pharmaceutical industry was fruitful to place many cutting edge technologies on the market improving health care outcomes and life quality in previously incurable illnesses [1]. Innovation rate as well as rising health expectations due to improved living standards spilled over the skyrocketing health expenditure trends from the rest of the world to Eastern Europe as well [2,3]. Substantial demographic long term change contributing to the expanding morbidity and mortality from prosperity diseases has certainly accelerated population aging affecting majority of European nations as well [4,5]. Such a profound societal change reflected itself to the health care expenditure issues across nations [6]. Drug acquisition cost account for 15-20 % in majority high-income economies [7] while it is much more relevant among emerging markets accounting for up to one half of public expenditure on health [8]. Regardless of rather modest contribution of pharmaceuticals to the overall financial burden of illness in many countries, these costs remain most easily reachable by different cost containment policies [9].

Serbia could be regarded typical of wider Eastern European national health systems reforms taking place during past 25 years. It is the largest Western Balkans market and its pharmaceutical sector inner changes reflect broader circumstances that globalisation brought to the emerging regional econo-

mies [10]. For beneath mentioned assessments we relied on two complimentary sources: Global Health Expenditure Database issued by the World Health Organization relying on National Health Account system [11] and European Health For All Database (HFA-DB) [12]. Joined databases allowed insight into core national expenditure related indicators of the local market during 1995-2012 time span. National Health Accounts system of evidence and tracking of financial flow within the national health systems across the globe has been implemented in Serbia for many years [13].

National health care expenditure during past 18 years has increased approximately five fold in purchase power parity (PPP) current \$ terms. This pattern actually followed dynamic overall economic development of the country and surrounding region [3, 10]. Gross Domestic Product increased from lower middle income range in the middle of 1990ties to the upper middle income in 2012. Even more relevant compared to the health market size itself is its profound inner transformation. From Table 1 we can easily notice that tenfold pharmaceutical expenditure growth tops the list. This should be contributed to the strong and successful market access by many novel medical technologies that took place during past two decades [14]. Rather subtle, hidden change that can be observed is that public expenditure on medicines only tripled at the same time. This ratio virtually marks movement of drug acquisition costs from large state

Corresponding author:

Associate Professor Mihajlo B. JAKOVLJEVIĆ, MD, PhD

Department of Pharmacology and Toxicology, Faculty of Medical Sciences,  
University of Kragujevac, Svetozara Markovica 69, 34000 Kragujevac, Serbia  
E-mail: sidartagothama@gmail.com

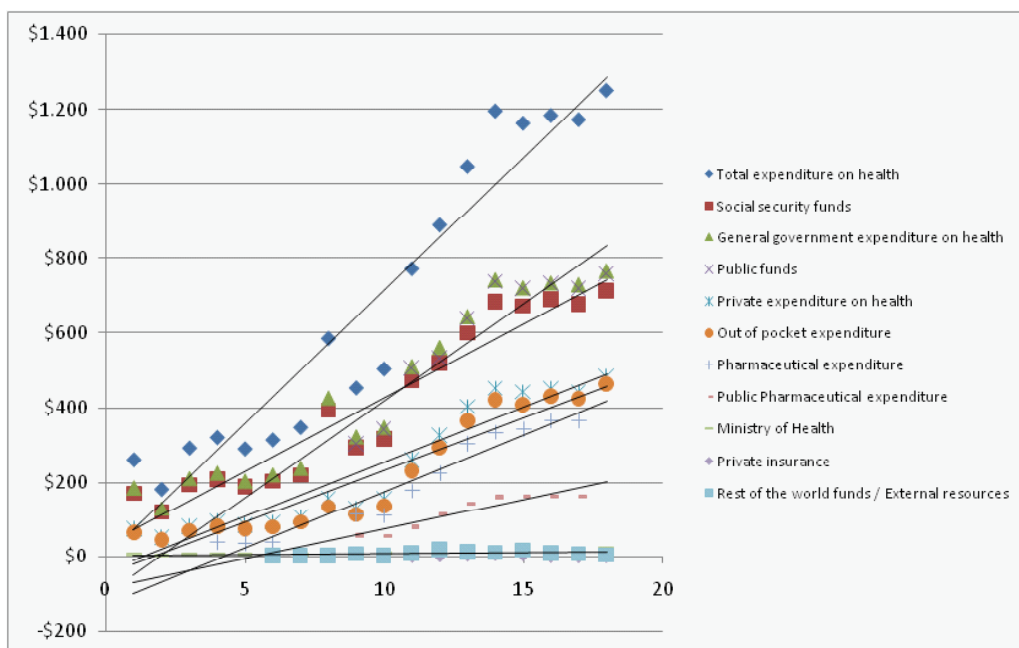
Indicator value	1995 or closest year available	2012 or closest year available	Increase ratio 2012/1995	Annual increase (PPP \$)
Pharmaceutical expenditure*	\$37.79	\$366.88	9.71	\$24
Out of pocket expenditure	\$64.06	\$464.03	7.24	\$22.22
Private expenditure on health	\$75.53	\$485.37	6.43	\$22.77
Total expenditure on health	\$259.86	\$1,249.78	4.81	\$55.00
Social security funds	\$170.56	\$714.32	4.19	\$30.21
General government expenditure on health	\$184.32	\$764.41	4.15	\$32.23
Ministry of Health	\$6.11	\$22.55	3.69	\$0.91
Public Pharmaceutical expenditure*	\$56.98	\$164.00	2.88	\$8
Public funds*	\$302.56	\$759.76	2.51	\$45.72
Rest of the world funds / External resources*	\$3.37	\$4.65	1.38	\$0.10
Private insurance*	\$4.14	\$3.82	0.92	-\$0.04

**Table 1.** Health expenditure values and increase; Serbia 1995-2012 per capita PPP \$ terms

\* Few indicator annual increase rates were calculated on shorter observation period ranging 8-17 years due to missing values. Majority of indicator's values refer to the full 18 year time span.

owned Eastern European, post-Semashko insurance funds towards ordinary citizens. This phenomenon was extensively described in literature with all its consequences for the affordability of drugs to the ordinary citizens [15]. In line with aforementioned fact, total out of pocket health care expenditure is the second ranked indicator with more than seven fold growth in 18 years. An unavoidable con-

sequence of denial of patient access to the effective primary and preventive care is decreasing citizen satisfaction at the first place [16]. Even deeper „boomerang“ effect is expected in terms of worsened health outcomes and longevity due to poor affordability of medicines and early diagnostic screenings to ordinary citizens [17].



**Figure 1.** National health expenditure trends in Serbia during 1995-2012 period; expressed in current PPP \$ values per capita

\* Sources of data: WHO Global Health Expenditure Database 1995-2012 and European Health for All Database (HFA-DB) 1995-2012

Observing the landscape of structural changes, it should be inevitably emphasized that public sector remains the strongest single contributor with National Health Insurance Fund (RFZO) presenting the core first party payer. Trends depicted at Figure 1 exhibit that social security funds, public funding of pharmaceuticals and so called “rest of the world funds” and private insurance contributions follow the overall increase at a much slower pace. Lag of social security funding could be partially attributed to recession induced cost containment strategies currently in place [3, 10]. Another cause is prevailing growth of direct medical costs of demanding hospital inpatient care in many clinical disciplines as evidenced by pioneering domestic cost of illness assessments [19-24]. Poor participation in medical costs by private insurance companies reflects their insufficient market penetration in Serbia and broader CEE region [25, 26]. One of rather successful strategies to combat sky rocketing drug acquisition costs is generic replacement which proved itself among some of the leading global markets [27].

A continuous social transformation seems to be replacing historical legacy of unsustainable health funding mechanisms with growing out of pocket participation by the insured citizens. World Health Organization has declared universal health coverage as its main strategic goal for the national health systems [28]. So far, for the most of these 18 years, coverage by domestic insurance premiums was actually falling both in terms of variety of services offered and the percentage of general population owning such premises. Some key health outcomes of the national health system of Serbia such as life expectancy at birth have anyway increased. These promising successes bring some hope for the future. Nevertheless national policy makers will be forced to develop more efficient legal framework in order to finance health care in a long term sustainable manner. Current difficulties in provision of medical care and increasingly frequent drug shortages experienced in recent years might be an alarm bell if we learn fast. Serbian national health system with its centuries old legacy has the advantage of administrative tradition. If it overcomes current weaknesses and adapts to an increasingly globalised market where emerging BRIC economies influence is going to rise, it may become a proper model for the surrounding communities [29].

## ACKNOWLEDGEMENT

The Ministry of Science Education and Technological Development of the Republic of Serbia through Grant N°175014 has financed this study.

## REFERENCES

1. Kovacevic AM, Rancic NK, Tarabar DK, Dragojevic-Simic VM. Targeted Therapy and Its Availability in Serbia. *Hospital Pharmacology*. 2014; 1: 93-101.
2. Yamada T, Chen CC, Yamada T, Chiu IM, Worrall JD. Pharmaceutical price control policy, pharmaceutical innovation, and health durability. *TOPHARMEJ*. 2010; 2: 34-46.
3. Jakovljevic MB. Resource allocation strategies in Southeastern European health policy. *Eur J Health Econ*. 2013; 14:153-9.
4. Murata C, Yamada T, Chen CC, Ojima T, Hirai H, Kondo K. Barriers to health care among the elderly in Japan. *Int J Environ Res Public Health*. 2010; 7:1330-41.
5. Chawla M, Betcherman G, Banerji A. From red to gray: the “third transition” of aging populations in Eastern Europe and the former Soviet Union. 6th ed. Washington D.C: World Bank Publications; 2007.
6. Getzen TE. Population aging and the growth of health expenditures. *J Gerontol*. 1992; 47: 98-104.
7. Ess SM, Schneeweiss S, Szucs TD. European healthcare policies for controlling drug expenditure. *Pharmacoeconomics*. 2003; 21: 89-103.
8. Liu GG, Zhao Z, Cai R, Yamada T, Yamada T. Equity in health care access to: assessing the urban health insurance reform in China. *Soc Sci Med*. 2002; 55: 1779-94.
9. Dagovic A, Zugic A, Jakovljevic M. Macroeconomic policy impact to oncology related public expenditure in an emerging European market - signs of early recovery. *SJECR*. In press 2014.
10. Jakovljevic M, Jovanovic M, Lazic Z, Jakovljevic V, Djukic A, Velickovic R, et al. Current efforts and proposals to reduce healthcare costs in Serbia. *Ser J Exp Clin Res*. 2011; 12: 161-3.
11. World Health Organization. Global Health Expenditure Database. NHA indicators. Available at: <http://apps.who.int/nha/database/Select/Indicators/en> [accessed 10th July 2014].
12. World Health Organization. European health for all database (HFA-DB). World Health Organization Regional office for Europe. Updated: April 2014. Available at: <http://data.euro.who.int/hfad/> [accessed 10th July 2014].
13. Gajic-Stevanovic M, Teodorovic N, Dimitrijevic S, Jovanovic D. Assessment of financial flow in the

- health system of Serbia in a period 2003-2006. *Vojnosanit Pregl.* 2010; 67: 397-402.
14. Jakovljevic MB. Oncology monoclonal antibodies expenditure trends and reimbursement projections in the emerging Balkan market. *Farmeconomia: Health economics and therapeutic pathways.* 2014; 15: 27-32.
15. McLeod L, Bereza BG, Shim M, Grootendorst P. Financial burden of household out-of-pocket expenditures for prescription drugs: cross-sectional analysis based on national survey data. *Open Med.* 2011; 5: 1-9.
16. Vukovic M, Gvozdenovic BS, Gajic T, Stamatovic Gajic B, Jakovljevic M, McCormick BP. Validation of a patient satisfaction questionnaire in primary health care. *Public Health.* 2012; 126: 710-8.
17. Majstorovic BM, Milakovic BD, Markovic SZ, Mijajlovic MS, Kastratovic DA. The Results and Methodological Concerns about Pharmaco-Economic Evaluation in Anesthesia. *Hospital Pharmacology.* 2014; 1: 68-75.
18. Kovacevic A, Dragojevic-Simic V, Rancic N, Jurišević M, Gutzwiller F, Matter-Walstra K, et al. End-of-life costs of medical care for advanced stage cancer patients. *Vojnosanit Pregl.* In press 2015.
19. Jakovljevic M, Lazic Z, Verhaeghe N, Jankovic S, Gajovic O, Annemans L. Direct medical costs of COPD diagnosis and treatment, Eastern vs. Western European country - examples of Serbia and Belgium. *Farmeconomia. Health economics and therapeutic pathways.* 2013; 14: 161-9.
20. Jakovljevic M, Mijailovic Z, Popovska Jovicic B, Canovic P, Gajovic O, Jovanovic M, et al. Assessment of viral genotype impact to the cost-effectiveness and overall costs of care for peg-Interferon-2α + ribavirin treated chronic hepatitis C patient. *Hepat Mon.* 2013; 13: e6750.
21. Jakovljevic M, Rankovic A, Racic N, Jovanovic M, Ivanovic M, Gajovic O, et al. Radiology Services Costs and Utilization Patterns estimates in South-eastern Europe - A Retrospective Analysis from Serbia. *Value in Health Regional Issues.* 2013; 2: 218-25.
22. Jakovljevic M, Cupurdija V, Lazic Z. Cost of illness of community-acquired pneumonia. Review of the literature and possible strategies in the Serbian health care setting. *Farmeconomia. Health economics and therapeutic pathways.* 2013; 14: 133-9.
23. Jakovljevic M, Varjagic M, Jankovic S. Cost-Effectiveness of Ritodrine and Fenoterol for Treatment of Preterm Labour in a Low-Middle-Income Country: A Case Study. *Value Health.* 2008; 11: 149-153.
24. Jovanovic M, Jakovljevic M. Inpatient Detoxification Procedure and Facilities: Financing Considerations from an Eastern European Perspective. *Alcohol Alcohol.* 2011; 44: 547-54.
25. Malý I, Kostadinova T, Nemec J, Setnikar Cankar S, Darmopilova Z. Financing Health Care: What Can we Learn from CEE Experience? *Administrative Culture.* 2013; 14: 212-37.
26. Tambor M, Pavlova M, Rechel B, Golinowska S, Sowada C, Groot W. The inability to pay for health services in Central and Eastern Europe: evidence from six countries. *Eur J Public Health.* 2014; 24: 378-85.
27. Jakovljevic M, Nakazono S, Ogura S. Contemporary generic market in Japan - key conditions to successful evolution. *Expert Rev Pharmacoecon Outcomes Res.* 2014; 14:181-94.
28. World Health Organization. Available at: <http://www.who.int/whr/en/> [accessed 10th July 2014].
29. Jakovljevic M. The key role of leading emerging BRIC markets for the future of global health care. *SJECR.* In press 2014.

Received: July 15, 2014  
Accepted: August 20, 2014