



Explicit and Implicit Influences on Economic Reasoning of Health Professionals After the Global Crisis 2008/2009 - Challenges or Keys in the Recovery of Health Systems in the Forthcoming Global Crisis?

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SUMMARY

Introduction: Due to the global crisis of 2008/2009, health professionals have become aware of the lack of resources in the health system when they were forced to allocate resources themselves during their daily work. However, it remains poorly researched how the global crisis accompanied by cost containment is reflected in the economic reasoning of health professionals.

Aim : The aim of this study was to identify the dimensions of economic reasoning of health professionals who are subject to implicit influences.

Methods: The academic study included a random sample of health professionals in the institutions of the Republic of Serbia, who voluntarily agreed to fill healthcare professionals' economic reasoning questionnaire with nine items (HPER-9) which contains seven dimensions: the negligence of the cost of quality by the administration and financier; the consideration of the market price and healthcare benefit; market orientation considering patient's requests the recognition of inadequate resource allocations by non-medical administrative authority; the attitude about redirecting the profit from state to private healthcare sector; the recognition of the unjustified spending by the healthcare professionals, and the physician / patient relationship. Respondents were divided into two groups according to the time of the survey. The first group of respondents was surveyed before the introduction of restrictive measures in the health system of the Republic of Serbia. The second group of respondents was surveyed after the implementation of restrictive measures due to the economic crisis.

Results: Compared to the period before the introduction of economic restrictions, after their introduction, the score of the consideration of the market price and healthcare benefit as well as score of the physician / patient relationship remained unchanged, while scores of other dimensions have deteriorated.

Conclusions: The negligence of quality costs of non-medical administrations, unjustified spending by healthcare professionals, the attitude about redirecting the profit from state to private healthcare sector but also the behavior of non-medical administrations, are important dimensions of economic judgment and behavior of health professionals under

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implicit economic influences.

Keywords: economic reasoning, health professionals, global crisis, cost containment

INTRODUCTION

In the past decade, due to the global economic crisis of 2008/2009, health professionals and patients have become aware of the lack of resources in the health system [1]. As patients had bitter experience with waiting lists for health services, but also with restricting access to certain drugs or procedures in the public (state) health sector [2], employees in the health sector were forced to resort to streamlining procedures during daily practice in decision-making [3], i.e. to allocate funds on their own at the microeconomic level by adapting to the circumstances marked by the lack of resources [4,5,6]. The micro-allocation of funds, in turn, has triggered an avalanche of new problems related to some of its ethical aspects, such as: (1) utilitarianism (maximization of well-preserved years of life) [7]; (2) egalitarianism (giving equal opportunities to all) [8]; (3) prioritism (giving priority to those most at risk) [9].

On the other hand, measuring the economic judgment of health professionals can be defined as measuring the subjectively expressed level of experience of health professionals in the spectrum of dimensions of reasoning about the personal economic role of health care employees, the economic role of management and the economic role of education and occupation of health professionals [10]. However, the economic judgment of health professionals is subject to influences, both from the microeconomic level (implicit influences) [11] and from the macroeconomic level (explicit influences) [12].

AIM

The aim of this study was to identify the dimensions of economic reasoning of health professionals who are subject to implicit influences, as well as to identify the dimensions of economic reasoning who are subject to explicit influences, before and after the introduction of restrictive measures in the health system of Serbia during the global economic crisis.

METHODS

The academic study included a random sample of doctors, dentists and pharmacists employed in primary, secondary or tertiary health care in the institutions of the Republic of Serbia, who voluntarily agreed to fill healthcare professionals' economic reasoning questionnaire with nine items (HPER-9) [10]. Respondents were divided into two groups according to the time of the survey. The first group of respondents was surveyed before the introduction of restrictive measures in the health system of the Republic of Serbia in 2010. The second group of respondents was surveyed after the implementation of restrictive measures due to the economic crisis in the period 2011-2012.

The HPER-9 questionnaire is a structurally validated and reliable instrument [10] with only 9 items and contains the following seven dimensions of economic judgment of health professionals: (1) the negligence of the cost of quality by the administration and financier; (2) the consideration of the market price and healthcare benefit; (3) market orientation considering patient's requests; (4) the recognition of inadequate resource allocations by non-medical administrative authority; (5) the attitude about redirecting the profit from state to private healthcare sector; (6) the recognition of the unjustified spending by the healthcare professionals and (7) the physician / patient relationship. Modalities of the offered answers according to the HPER-9 questionnaire were: I quite agree, I agree, I don't have opinion, I don't agree and I don't agree at all. The offered ordinal answer modalities will be expressed numerically according to the upward Likert's scale from 0-4, corresponding to the level of the agreement with each item or assertion, so that the minimum level of agreement (I don't agree at all) is rated as a 0, whereas the maximum level of agreement (I quite agree) is rated as a 4.

Statistical methods

Category variables are described by frequency and percentage. The description of numerical variables was performed by the arithmetic mean as a measure of the central tendency of

the data set, while their variation is shown by standard deviation. The difference in scores by dimensions and total score between different groups of respondents was assessed by Student t-test. The accepted level of statistical significance was 0.05. The statistical package for social research "SPSS 19" (Chicago, Illinois) was used for data processing.

RESULTS

The total number of respondents included in the study in both study periods was 1472, and they came from a total of 64 health care institutions in the Republic of Serbia. In the period before the introduction of economic restrictions, there were 650 respondents (44.16%). Of the total number of respondents, 69 (5.09%) were dentists, 76 were pharmacists (5.16%), while the remaining respondents were doctors (89.75%). Descriptive statistics according to the scores of economic judgment of health professionals in the total study population before and after the intervention are shown in Table 1.

A difference was found in the period before in relation to the period after economic restrictions in the score of dimension 1 ($t = 3.350$, $p = 0.001$). A higher score, i.e. a less noticeable negligence of the cost of quality by the administration and financier was found before the economic restrictions in relation to the period after the economic restrictions (Table 2). There was no difference in the period before compared to the period after the intervention in the score of dimension 2 - The consideration of the market price and healthcare benefit ($t = -0.957$, $p = 0.551$). However, there were differences in the period before compared to the pe-

riod after the economic restrictions in the score of dimension 3 ($t = 2,800$, $p = 0.005$). A higher score, i.e. a more noticeable degree of market orientation considering patient's request was before economic restrictions, compared to the period after economic restrictions (Table 2). A difference was also found in the period before, in relation to the period after economic restrictions in the score of dimension 4 ($t = 9.393$, $p < 0.0001$). The higher score, i.e. higher level - The recognition of inadequate resource allocation by non-medical administrative authority, was before economic restrictions in relation to the period after economic restrictions (Table 2). A difference was found in the period before in relation to the period after the intervention in the score of dimension 5 ($t = 2.979$, $p = 0.003$). A higher score, i.e. a less intense attitude towards the redirecting the profit from the state to the private healthcare sector was measured before the economic restrictions in relation to the period after the economic restrictions (Table 2). In the period before versus the period after economic restrictions, a difference in the score of dimension 6 was found ($t = -7.406$, $p < 0.0001$). A higher score, i.e. higher the recognition of unjustified spending by healthcare professionals, was found after economic restrictions compared to the period before economic restrictions (Table 2). There was no difference in the period before compared to the period after the intervention in the score of dimension 7 - The physician / patient ratio ($t = -0.947$, $p = 0.344$) - Table 2. Economic restrictions also led to a decrease in the total HPER-9 square in the period after - compared to the period before their introduction ($t = 4.663$, $p < 0.0001$) - Table 2.

Table 1. Descriptive statistics by HPER-9 scores dimensions and the total HPER-9 score for respondents in both periods (before and after the introduction of economic restrictions)

SD - Standard Deviation.

	N	Mean	SD
D1 score - The negligence of the cost of quality by the administration and financier	1472	1.46	0.97
D2 score - The consideration of the market price and healthcare benefit	1472	2.76	0.90
D3 score - Market orientation considering patient's requests	1472	1.54	0.90
D4 score - The recognition of inadequate resource allocation by non-medical administrative authority	1472	2.49	0.84
D5 score - The attitude about redirecting the profit from state to private healthcare sector	1472	1.91	0.79
D6 score - The recognition of the unjustified spending by the healthcare professionals	1472	2.29	0.74
D7 score - The physician/patient relationship	1472	1.49	1.22
Total HPER-9 score (from 4 to 44)	1472	24.91	4.38
Total HPER-9 score (from 0% to 100%)	1472	52.27	10.94

	Before economic restrictions		After economic restrictions		P
	N	Mean±SD	N	Mean±SD	
D1 score - The negligence of the cost of quality by the administration and financier	650	1.55±0.90	822	1.38±1.02	0.001
D2 score - The consideration of the market price and healthcare benefit	650	2.74±0.88	822	2.77±0.91	0.551
D3 score - Market orientation considering patient's requests	650	1.61±0.90	822	1.48±0.95	0.005
D4 score - The recognition of inadequate resource allocation by non-medical administrative authority	650	2.72±0.83	822	2.31±0.85	0.000
D5 score - The attitude about redirecting the profit from state to private healthcare sector	650	1.98±0.75	822	1.85±0.83	0.003
D6 score - The recognition of the unjustified spending by the healthcare professionals	650	2.14±0.70	822	2.41±0.74	0.000
D7 score - The physician/patient relationship	650	1.52±1.16	822	1.46±1.26	0.344
Total HPER-9 score (from 4 to 44)	650	25.50±4.12	822	24.43±4.52	0.000
Total HPER-9 score (from 0% to 100%)	650	53.76±10.29	822	51.09±11.30	0.000

Table 2. Description and analysis of differences in the HPER-9 scores in the period before versus the period after the introduction of economic restrictions in the health system of the Republic of Serbia

SD - Standard Deviation.

DISCUSSION

From the point of view of reasoning and decision-making of health experts regarding the micro-allocation of funds in institutions, we showed that the observations of health experts were that the degree of inadequate resource allocation by non-medical administrative authority was less noticeable after compared to the period before economic constraints. On the other hand, health experts observed that the unjustified spending by healthcare professionals was more noticeable after, compared to the period before the economic restraint. In other words, the intervention of economic restraint, in itself, is a consequence of micro-allocation of funds, by which financiers, in our case the Republic Health Insurance Fund (RHIF) of the Republic of Serbia, allocate less funds to the health sector due to budget deficit. However, the policy of economic restraint cannot be considered a good economic policy that with clear certainty leads to any savings of resources in the health sector [13 – 15]. Hence, the impact of economic constraints is defined as implicit. Also, such a policy cannot be considered reformist, because health system reform implies long-term projection of the effects of different models of health systems based on good evaluation of previous causes of unjustified spending, poor allocation of funds, loss of funds, as well as deficiencies or abuses

in health insurance and healthcare processes.

At the beginning of this decade, health care reforms planned to be implemented in the U.S. health care system are based on a quality and value-based payment approach. This approach should include permanent evaluation of quality costs, as well as control and gradual unification of prices and quality of health services, both in the private (supplementary insurance) and in the state (fixed, mandatory) health sector [16]. However, the assessment of quality costs in the healthcare industry comes down to the individual efforts of researchers, both in developed and economically underdeveloped countries [17, 18]. On the other hand, in our study we showed that the main dimension of economic reasoning of health professionals is the negligence of the cost of quality by the administration and financier authority, and that in the period after, compared to the period before economic restrictions, there was an intensification of their neglect. This result is explained by the fact that from the period of introduction of restrictions until the beginning of 2014, in the health system of the Republic of Serbia, but also in developed European countries, preparations were made for the introduction of payment for health services to hospitals according to the system of diagnostic related groups (DSG) [19 – 20]. The mentioned pay-

ment model is known to be extremely restrictive, although it achieves “unification” of the costs of diagnostics and treatment of patients according to internationally coded diagnoses. However, a well-known drawback of this payment system is that its application neglects, misjudges or underestimates the cost of health care quality, especially in the treatment of critically ill patients [17]. It is pointed out that the DSG payment system does not provide any knowledge, control or restraint of costs in the private health sector in the Republic of Serbia, so it will not be known how they affect the costs and quality of health services in the state health sector. In this study, we showed that economic restrictions in health professionals produce an experientially detrimental experience that their work in public institutions is not worthwhile, and that profits can be expected in the private health sector due to their stronger attitude about redirecting the profit from state to private healthcare sector. However, this actually leads to redirecting the costs of poor quality from the private to the state sector, because more difficult and serious health outcomes should be expected for the most difficult patients who are predominantly treated in state inpatient institutions in the Republic of Serbia.

We have shown that under implicit influences a lower degree of inadequate resource allocation can be expected by non-medical administrative authority, while paradoxically, implicit influences lead to an increasing degree of unjustified spending by healthcare professionals. This is confirmed by examples of interventions in European countries related to the control of adverse outcomes in the use of benzodiazepines, where, true, “at all costs” not only wanted to save, but an attempt was made to reduce the possibility of serious adverse health outcomes in the elderly population [22]. A new physician payment model (“pay-to-performance”) was applied here, where physicians received bonuses if they replaced one benzodiazepine drug in the elderly with another, safer for the elderly population. However, it has been completely lost out of sight that the younger population, which has also become addicted to benzodiazepines due to their inadequate and excessive use, will also grow old. Rewarding doctors in order to achieve vague and irrationally defined microeconomic goals, prospectively speaking, is only attempt to construct a “per-

petuum mobile” for unjustified spending of resources, especially human resources with unforeseeably bad consequences in the health system. Regarding the excessive use of benzodiazepines, authors support the opinion that it is inappropriate to do nothing to control their use, as is the case in Serbia or Croatia, but to follow the example of neighboring Slovenia, which successfully solved this problem gradually, favoring explicit macroeconomic impacts. Authors suggested to improve the health system by increasing the number of psychiatric specialists who will be able to balance the cost-benefit and properly use a quality group of benzodiazepines. This is possible through economic investment in the health system, which depends on the overall economic power of the countries, Serbia and Croatia, which can use the results of Slovenia as an example [23]. Regarding the second, but no less important dimension of economic judgment of health professionals regarding the degree of consideration of the market price and health benefits, the level of which remained unchanged under the influence of economic restrictions, we saw that it depends on knowledge and perceptions of health professionals about costs and expected effects. The aforementioned knowledge was acquired during basic and specialist studies of health professionals, during their continuous medical education, daily guild activities, such as the making and adoption of guides to good clinical practice at the national level, and the like [11]. The impacts that shape this dimension of economic reasoning of health professionals are known as explicit impacts, as they are based on well-considered strategies and medical evidence and as such, have long been “imprinted” in the minds of health professionals. Also, it was logical to expect absolute resistance of dimension 7 - Physician / patient relationship to change under implicit influence, which is shaped by a traditionally established relationship that suffers a historically long-lasting and strong explicit influence. The traditional doctor / patient relationship can only seemingly suggest its possible easy submission to local, implicit influences, but the basic ethical principles on which the medical sciences are based also come from the macroeconomic level.

CONCLUSION

Finally, authors conclude that the negligence

of quality costs of non-medical administrations and unjustified spending by healthcare professionals are the most important and informative dimensions of economic reasoning of health professionals about their behavior, but also the behavior of non-medical administrations under implicit economic influences. In addition to the negligence of the cost of quality, the shift of profits from the public to the private sector is an important dimension of economic judgment of health professionals, which also suffers implicit influences, especially in underdeveloped countries. In the face of the impending global economic crisis, all the above points to the urgent need to unify the prices of health services and electronically connect health institutions with financiers, both in the private and public health sectors, in order to adequately detect, evaluate and control quality costs in health institutions and prevent deepening budget deficit, due to inadequate allocation of resources in health systems.

CONFLICTS OF INTEREST

Author Mira H. Vuković declares that she has no conflict of interest.

REFERENCES

1. Coast J, Donovan J, Litva A, Eyles J, Morgan K, Shepherd M, Tacch J. If there were a war tomorrow, we'd find the money: contrasting perspectives on the rationing of health care. *Soc Sci Med* 2002;54:1839-51.
2. Alexander G, Werner R, Ubel P. The costs of denying scarcity. *Arch Intern Med* 2004;164:593-96.
3. Van Delden J, Vrakking A, Heide A, Maas P. Medical decision making in scarcity situations. *J Med Ethics* 2004;30:207-11.
4. Scheunemann LP, White DB. The Ethics and Reality of Rationing in Medicine. *CHEST* 2011;140(6):1625-32.
5. Jakovljevic M, Timofeyev Y, Ranabhat C, Fernandes PO, Teixeira JP, Rancic N, Reshetnikov V. Real GDP growth rates and healthcare spending - comparison between the G7 and the EM7 countries. *Global Health* 2020; 16 (1). doi: 10.1186/s12992-020-00590-3
6. Jakovljevic M, Jakab M, Gerdtham U, McDaid, D, Ogura S, Varavikova E, Merrick J, Adany R, Okunade A, Getzen TE. Comparative financing analysis and political economy of noncommunicable diseases. *Journal of Medical Economics* 2019; 22(8):722-727.
7. Neumann PJ, Weinstein MC. Legislating against use of cost-effectiveness information. *N Engl J Med* 2010;363(16):1495-7.
8. Childress J, Beauchamp T. *Principles of Biomedical Ethics*. New York, NY: Oxford University Press, 2009.
9. Persad G, Wertheimer A, Emanuel EJ. Principles for allocation of scarce medical interventions. *Lancet* 2009;373(9661):423-31.
10. Vuković MH, Jakovljević MB. Structural validity and reliability of the healthcare professionals' economic reasoning questionnaire. *Hospital Pharmacology - International Multidisciplinary Journal* 2015;2(3):308-316. (www.hophonline.org) doi:10.5937/hpimj1503308V
11. Strech D, Persad G, Marckmann G, Marion Danis M. Are physicians willing to ration health care? Conflicting findings in a systematic review of survey research. *Health Policy* 2009;90(0):113-124.
12. Eccles M, Mason J. How to develop cost-conscious guidelines. *Health Technology Assessment* 2001;5:1-69.
13. Jakovljevic M, Vukovic M, Chen C, Antunovic M, Dragojevic- Simic V, Velickovic-Radovanovic R, Djendji Mladenovic S, Jankovic N, Rankovic A, Kovacevic A, Antunovic M, Milovanovic O, Markovic V, Babu NS D, Yamada T. Do Health Reforms Impact Cost Consciousness of Health Care Professionals? Results from a Nation-Wide Survey in the Balkans. *Balkan Medical Journal* 2016;33:8-17.
14. Jakovljevic M, Vukovic M, Antunovic M, Dragojevic Simic V, Velickovic Radovanovic R, Siladji-Mladenovic D, Jankovic N, Rankovic A, Kovacevic A, Antunovic M, Markovic V, Chia-Ching C, Tetsuji Y. Do Policy Measures Impact on Cost Consciousness of Health Care Professionals? *VALUE IN HEALTH* 2013;16(7):A542-A542.
15. Borsci S, Uchegbu I, Buckle P, Ni Z, Walne S, Hanna GB. Designing medical technology for resilience: integrating health economics and human factors approaches. *Expert Review of Medical Devices* 2018;15(1):15-26.
16. Schroeder SA, Frist W. Phasing Out Fee-for-Service Payment. *N Engl J Med* 2013;368;21:2029-32.
17. Vuković M, Gvozdenović BS, Ranković M, McCormick BP, Vuković DD, Gvozdenović BD, Kastratović DA, Marković SZ, Ilić M, Jakovljević MB. Can didactic continuing education improve clinical decision making and reduce cost of quality? Evidence from a case study. *J Contin Educ Health Prof* 2015;35(2):109-18.
18. Glogovac M, Filipovic J. Quality costs in practice and an analysis of the factors affecting quality cost management. *Total Quality Management & Business Excellence* 2018;29(13-14):1521-44.
19. Vogl M. Assessing DRG cost accounting with respect to resource allocation and tariff calculation:

the case of Germany. *Health Economics Review* 2012;2:15.

20. European Observatory on Health Systems and Policies Series. *Diagnosis-Related Groups in Europe: Moving towards transparency, efficiency and quality in hospitals*. In Ed: Busse R, Geissler A, Quentin W, Wiley M. (Mc Grow Hill, New York, NY, 2011).

21. Mihailovic, N, Kocic S, Jakovljevic M. (2016). Review of diagnosis-related group-based financing of hospital care. *Health services research and managerial epidemiology* 2016;3(1-8): doi: 10.1177/2333392816647892.

22. Rat C, Penhouet G, Gaultier A, Chaslerie A, Pivette J, Nguyen JM, Victorri-Vigneau C. Did the new French pay for-performance system modify benzodiazepine prescribing practices? *BMC Health Serv Res* 2014;14:301. doi:10.1186/1472-6963-14-301

23. Marković SZ, Dimitrijević Jovanović NI, Sedić B, Vuković MH, Okjan JJ, Dimitrijević IK, Trikoš LD, Mojović MD, Kastratović DA. Impact of Differences in Economic Development and Socioeconomic Stability on Benzodiazepine Exposure between the Three Balkans Countries. *Psychiatria Danubina* 2019; 31(Suppl 5):S750-S760.

Eksplisiti i implicitni uticaji na ekonomsko rasuđivanje zdravstvenih stručnjaka posle globalne krize 2008/2009 - Izazovi ili ključevi u oporavku zdravstvenih sistema pred nadolazećom globalnom krizom?

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KRATAK SADRŽAJ

Uvod: Zbog globalne krize 2008/2009, zdravstveni stručnjaci postaju sveni manja sredstava u zdravstvenom sistemu kada su bili prinuđeni da sami vrše alokaciju resursa tokom svakodnevnog rada. Međutim, ostaje slabo istraženo kako se globalna kriza praćena ogranićavanjem troškova odražava na ekonomsko rasuđivanje zdravstvenih stručnjaka.

Cilj: Cilj ove studije bio je da identifikuje dimenzije ekonomskog rasuđivanja koje podležu implicitnim uticajima.

Metod: Akademaska studija je obuhvatila slućajni uzorak zdravstvenih radnika u ustanovama Republike Srbije, koji su dobrovoljno pristali da popune upitnik ekonomskog rasuđivanja zdravstvenih radnika sa devet pitanja, koji sadrži sedam dimenzija: zanemarivanje troškova kvaliteta administracije i finansijera; razmatranje tržišne cene i zdravstvene dobiti; tržišna orijentacija prema zahtevima pacijenta; prepoznavanje neadekvatne alokacije resursa od nemedicinskih organa uprave; stav da se profit preusmerava iz državnog u privatni zdravstveni sektor; prepoznavanje neopravdanog trošenja zdravstvenih stručnjaka, i odnos lekar / pacijent. Ispitanici su prema vremenu anketiranja podeljeni u dve grupe. Prva grupa ispitanika anketirana je pre uvođenja restriktivnih mera u zdravstveni sistem Republike Srbije. Druga grupa ispitanika anketirana je nakon sprovođenja restriktivnih mera zbog ekonomske krize.

Rezultati: U odnosu na period pre uvođenja ekonomskih restrikcija, posle njihovog uvođenja, samo su skorovi za dimenzije razmatranje tržišne cene i zdravstvene dobiti kao i odnosa lekar/ pacijent ostali nepromenjeni, dok je po skorovima preostalih dimenzija došlo do pogoršanja ekonomskog rasuđivanja i ponašanja zdravstvenih stručnjaka.

Zaključak: Zanemarivanje troškova kvaliteta nemedicinskih organa uprave, neopravdano trošenje zdravstvenih radnika, stav o preusmeravanju profita iz državnog u privatni zdravstveni sektor, važne su dimenzije ekonomskog rasuđivanja i ponašanja zdravstvenih stručnjaka pod implicitnim ekonomskim uticajima.

Ključne reći: ekonomsko rasuđivanje, zdravstveni stručnjaci, globalna kriza, obuzdavanje troškova

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