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Thesis of Ph D dissertation

**MANAGEMENT IN PUBLIC HEALTH
FOCUSING ON
FINANCING HOSPITALS**

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1. Goals of the Research

Public health is a special field of the economy with specific features, which can result in market insufficiency. It is marked by asymmetry of information, influenced by political and external effects, by the public health lobby. The government coordinates it by controlling and regulating its activities, providing necessary laws, legal, determines and stabilizing policy. It accelerates the economic efficiency of the distribution of resources and works out programs to influence the distribution of incomes. The health-system plays a key role in the transformation of society.

This is based on the fact that health is a basic need, a specific item of the economy, which cannot be substituted by any other „products”

- Its lack destroys one's ability to earn income
- Its demand is not determined by the capacity to pay
- The quality, duration of the time to restore health, cannot be planned in advance

All over the world public health influences only in 10-11 % of the state of health. In spite of this fact, public opinion puts the responsibility on the sector of public health for the general state of health of the Hungarian population. Public health is expensive. The increasing resources cannot keep pace with the increasing demand for resources. Economic growth is not able to cover the costs of technical and scientific development. That means, the conflict between what is technically possible and what the government can afford appears.

Public health struggles with difficult financial problems and maintenance of satisfactory services all over the world. In the poor regions the main problem is the lack of financial resources but even in the most developed countries, where a lot of money is spent for public health, the medical society wants basic changes, and the financial authorities want changes as well.

The author of this thesis has been dealing with the economic questions of public health for years. This thesis was designed to demonstrate the findings of the research.

The goal of the thesis was to examine what kind of deeper economic correlations the changes in public health policy.

It has also drawn the attention to the need for a basic rational transformation concerning the negative gap between the sinking state of health of the population and the public health services. The aim of this thesis is to reveal and work out this problem.

Thirdly the dissertation tries to analyse in a comprehensive way the most critical area of public health, that is, the bed-patient-sector.

Finally it aims to show the possibilities of improving the financial system of bed-patient-sector.

Scientific research results and analyses, which are continuously published in technical literature, gave significant help to accomplish these aims.

2. Precedents and Applied Methodology

Health Economics as an independent scientific discipline emerged internationally in the 1950's. There is a wide range of national and international literature available. There is less national than international literature based on complex systems analysis. The follow-up, the elaboration and the integration into the health-providing system of the accelerating changes in the economics of public health is extremely incomplete. There is a great need for revealing and analysing the changes in the economic aspects of public health; this is the aim of this thesis.

The study is supported by national and international analysis as well. It uses them to show the specific economic characteristics of public health. It pays extra attention to analysing the facts influencing the need for public health and to the history of the bed-patient-sector. It elaborates the former and present forms of financing of the bed-patient-sector with theoretical and practical approaches.

Based on theoretical research, the dissertation shows that during the system-change in the economic characteristics of public health, cost efficiency has not been developed in public health. The present system does not allow the most economically efficient and medically practicable services.

The thesis deals especially with the international financing systems, the role of the state in the different financing models, financing the bed-patient-sector and it presents the history of bed-patient statistics.

The phases of collecting information for the research are studying national and international literature, collection of statistical data, empirical examinations in the Margit Hospital and Polyclinic in Csorna, in the Church Sponsored Public Health Association in Veresegyháza and in the Erzsébet Hospital in Sopron.

After collection of data the following steps have been made: systematizing and selection of data, analysis with statistical methods, preparing statistical tables and graphic illustrations, survey, analysing empirical distributions, computation of indices, calculation of correlation- and regression.

There were consultations with the leaders of public health institutions. The topics of the thesis were discussed at conferences and were published in scientific journals.

There were some new methods used in the thesis like the survey of the connection between input and output financing with regression calculation, correction of HDG weighted numbers with the public health price index, applying the rank correlation coefficient in connection with indexes for the bed-patient-sector, deduction of financial losses of changing of output, questionnaire-research of the financing role of NGO-s.

3. Main Statements of the Thesis

The suppliers of public health are drifting into a difficult situation because of the increasing professional opportunities in public health, and the increasing needs with continually shrinking resources, because of the contradictions of financing and the inefficient operation. There is a general tendency that the population is aging, life expectancy is increasing, and the birth rate is decreasing. The elderly population suffering from chronic illnesses needs more and expensive services. The costs of public health are growing because of the increasing demands and needs, but the increase of resources cannot keep pace with it, so the tension within the system becomes permanent. The funding for public health has been getting smaller and smaller in the last few years. The economic incentives were lacking, and an inefficient economic and professional structure still remains. Based on international experiences of expenditures for public health and the development of the economy, the ratio between expenditures for public health and the GDP in Hungary is very bad compared to the

developed countries. The empirical analysis based on the case study in the Erzsébet Hospital of Sopron makes clear the lack of money for daily operations.

Here are the results and conclusions of the research:

1. Providing public health is a state responsibility to provide equal access to health care in Hungary. The reasons for state intervention are the market failures, because the market is not in the state of Pareto-efficiency, and the inequalities of incomes. It has been proved by empirical examinations that the access to public health in the underdeveloped regions of the country on the basis of GDP per person is worse and the life expectancy is shorter as well.
2. Former economic systems did not consider the activity of public health as value making, although it has an important role in producing the gross national product. That is the reason why public health does not have to be considered as one necessary but awkward part of the expenditure side of state finance, but as one of the most important sector of services. Public health is not "slot-machine swallowing money", but an innovative leading branch of the economy.
3. The research proved that elaborating a more efficient demographic policy is necessary to moderate the decrease of the population, to improve the state of health of the population, to increase the length of life expectancy. Public health has to be financed free from daily politics. It has to be regulated by long-term economic rules and controlled by the public. To control financing there is a need to create quality standards, protocols that serve the requirements of the whole system.
4. The research confirmed the fact that the social insurance based on compulsory contribution is nearly as good as the insurance of efficient financing and it does not offer only minimum-services („service for the poor”), but it covers a wide, range of services. International experiences show as well that the compulsory, income-based insurance can be operated efficiently and at the same time it is possible to provide access to a wide range of services ensured by income-redistribution. While reforming the liability-side of the contribution-system the aim is to have a contributing payer behind each citizen, and the contribution paid would be enough to cover the average costs of the services.

5. While studying literature the thesis proves that once the economic level of a country is improved, then the proportion of the tertiary sectors (where public health also belongs to) within the economy also increases.
6. Extra voluntary financial payment inside the financing system creates several dysfunctions in the system of public health. In Hungary it will probably take a long time in to eliminate this decreasing because of its complexity.
7. Because of the financial dysfunctions some professionally possible treatments cannot be performed. To prevent the unjustified increase of expenditures it is necessary to reconsider the principles of financing, to prevent artificial performance-increase, to make spending public money transparent, to build professional and service guarantees into the legal regulation while having respect for the autonomy of communities and institutions. As long as the structure of the public health system and the motivational system will not change in order to direct the public towards the cheaper services (outpatient-services, basic-services), the resource-problems of public health will remain in spite of permanent consolidations.
8. The yearly incomes of Health insurance funds in the period of 1993–2004 (calculated on basis of prices of 1993) are lower, than in 1993. The analysis refers to 3 possible reasons. The first reason is the decrease in contributions that provide 86.4% of the income. The second reason is the decrease of the number of insured people by 2.87 % yearly. The third reason is that the incomes were not planned according to the price index of public health.
9. Analysing the expenditures of the Health insurance Funds, including the expenditures of the bed-patient-sector, in the period of 1994-1999 the real value of both items decreased, but in the period of 2000-2004 there was a slight increase. The conclusion is that it does not offer an appropriate service for the public. According to my calculations more than 51 % of the resources (in real value) were withdrawn from public health in the period of 1990–2000.

The level of expenditures for public health according to the theoretical economic approach is optimal if one more resource-unit spent on public health would bring the

same (or less) profit for society, as if it were spent on any other sector in the economy (e.g. education, environment, etc.)

10. Correlation calculation has proved that there is a close relationship between the amounts of expenditure of the Health insurance fund and those expenditures of the bed-patient-sector that means that the increase of the expenditures of public health explains 99 % the increase in expenditures in the bed-patient-sector. The escarpment of the linear regression curve shows that if the expenditures of public health grow by 100 HUF, the expenditures of bed-patient-sector grow by 27.5 HUF.

11. The new financing method (based on performance in the financial system of public health) caused basic changes in the economy of public health institutions. While in 1990 there were countrywide 2.2 million patients discharged from 104,000 hospital beds (21.5 patients/bed), then in 2002, 2.7 million patients discharged from 80,000 hospital beds (33.8 patients/bed), in the Soproni Erzsébet Hospital of Sopron in 1990, 12,100 patients were discharged from 601 beds (20.1 patients/bed), in 2002, 18,200 patients were discharged from 519 beds, (35.1 patients/bed). The volume limit of performance has been introduced from 2005 onward to prevent over performance.

There is a need for public health employees to handle costs with special consciousness, to create a unified computerized information system in public health, and to make a unified financing system throughout Hungary, while paying attention to quality.

12. The method for financing the operating costs of hospitals from the National Health Insurance in cooperation with the Health Insurance Fund concerning the bed-patient-sector is based on homogenous disease group (HDG) weighted numbers, but these numbers do not follow inflation. The health sector suffered more from the inflation than the other government sectors, (January 2002 actual 95,000 HUF, January 2002 deflated 131,378 HUF). The index HDG does not include the financing for replacing assets.

13. Examining the connection of input- and output-financing we can find a close relationship between the number of beds in a hospital and the HDG index. One more bed increases this HDG index by 31.77 on average. The question is “what is the optimal number of beds?” The answer has not been found so far in Hungary.
14. Analysis showed that the hospitals are under-financed. Municipal hospitals (62.5% of all hospitals) are permanently struggling with considerable debts. Local authorities can spend less and less money from their resources on their hospitals. Expenditures of municipal hospitals from their own resources show an average decrease of 2.5 % yearly in the period of 1996-2002 in nominal value. This situation forces hospitals to measure their debts, to reschedule the settlement of their debts, to make their management easy to survey (introducing control systems, aspects of business economics) If it is not enough, a municipal commissioner is appointed to solve the problem temporarily.
15. The managers of institutions have to think in a new way about managing and directing their institutions. This requires quick adaptation, adequate recognition of situations, accurate up to date information, and permanent decisions from the management. The empirical survey showed that there is a new complex medical and economic information system in the Erzsébet Hospital in Sopron. Control has been established which has an important role in connection with local financing.
16. The change of the financial system of the bed-patient-sector is inevitable. One step should be the extension of managed medical services. It may help to highlight prevention, but there are several dangers as well, e.g. there is a chance that money will be withdrawn from public health. One of the most important results of the success of the model of Csorna is not the quantity of the savings, but the system developed around the hospital, which was able to raise the level of the service based on their existing skills. The released resources can be spent to develop the system and to service the population better. The examination of the church supported public health non-profit association proved that it is worth spending money on prevention, because the amount invested returns within a year. However by the critical processing of IBR (Directed System of Patient Management), it came to light that the danger of the

withdrawal of resources is significant. That is why its wider introducing has to be preceded by a detailed analysis and studies of its effects. Another solution can be the matrix hospital. Using this method it is possible to reach a better utilization of the capacity, but the decision-making process is slower. The Erzsébet Hospital in Sopron is trying to increase its bed capacity this way.

17. Joining to the European Community means new possibilities for tenders, which can be used to develop the infrastructure in the undeveloped regions.

18. The result of the questionnaire research shows that there is a need for civic organisations because they raise money for public health, and help financing the education of employees.

4. Latest Results of the Thesis

The author elaborated the financing system completely based on the economic foundation of public health, especially the field of the bed-patient-sector. Her statements were supported by empirical tests as well. There is no other treatment of this topic, like this in the national literature.

The latest results can be summed up as follows:

1. Empirical tests prove that the domination of public financing ensures the maximum level of health standards nationwide. Privatisation can be useful in some fields, but only as a device and not as an aim.
2. State-participation ensures that public health services are available for everybody because of the increase of efficiency (which ensures the decrease of administrative costs and enables the financing of the externals, like research and education,) and because of the success of the principle of social fairness, which also means equal access to health care.
3. Public health is a field where almost every part is regulated, but the regulation of public health as a branch is missing. The Parliament „, recognizing the responsibility for the health of the population” created a law about public health, but it did not formulate the basic principles, which are essential and necessary to the regulated operation of the system. The result is the present confused financing. For the decision-makers it is important to look at the results of studies, which define the tasks of public health at least in an approximate way.
4. Non-political, professionals, independent civic organisations that are not subordinated to the state, or local authorities, shall make decisions about resource-allocation in public health.
5. The income side of public health service-system should be financed with a part of the income from the sales tax on consumers' goods and food, which could cover the costs of treating the health problems caused by these products.

6. It is necessary to execute a restructuring consolidation, which means the state does not want to pay the debts of the institute, but reorganization has to be done according to local needs. Examining the regions of Hungary, we can state the following: in the present distribution system there is less money, where there is the shortest life expectancy and the poverty is greatest. The structure of hospitals has to be reorganized based on regional surveys of the present and the expected state of health of the population. (Morbidity surveys).
7. An optimal resource-distribution would occur theoretically when using that resource a positive change in the state of health, (that is “health profit”), is maximized.
8. The system of services, the spending of public money for public health has to be made transparent, both financing of daily operations and resulting costs.
9. Because of the aging of the population it would be advisable to increase the number of nursing beds in hospitals.
10. The HDG calculation is practical when the weighted-numbers change according to inflation and express direct cost ratios. That makes it possible for the hospital to have an interest in taking more complicated and of difficult cases. If the weighted-numbers express nursing-time, instead of cost ratios, hospitals are interested in taking cases with lower direct costs.
11. The institutes have to prepare for the modifying of HDG weighted numbers, for example, by adjusting the professional structure to the financing system, with making the best of coding.
12. The mixed, double or dual financing system is able to fill in its role with some modifications:
 - 12.1. The National Health Insurance should finance replacement of equipment as well as the operating costs in a proportional way, so the costs of amortization should also be calculated.
 - 12.2. The owners should ensure enough financial funds to finance new equipment.

12.3. It would be suitable to operate a central institute to insure the financial funds for expansion and development of equipment. One solution could be to establish a Public Health Capital developing (PCC), financed by the state budget, foundations, and other funds with civil control for its use.

5. Practical Application of the Results

One of the main goals of the research was to elaborate the practice-oriented results. Here are the most important ones:

1. The statistical analysis methods used in the study can help to elaborate the financial correlations, for evaluating hospitals in compensating for inflation.
2. Showing the advantages and disadvantages of the suggested methods of financial systems for the bed-patient-sector can serve as a contribution to the planning and achievement of the changes, which are necessary today.
3. Calculation with inflated weighted numbers makes it possible to finance on value according to homogenous sickness groups.
4. Suggestions made for structural changes can be useful, which aim to reorganize the hospital-structure based on the regional illness-surveys. The suggestion to increase the number of beds in nursing departments is important because of the aging of the population shown by demographic research.
5. Daily politics and the financing of public health must be separated. An efficient regulation of the sector should result in a particular situation in which resources have to be generated at public health institutions, which are capable of growth. These resources would provide the appropriate level of investments. Amortization, which is the replacement of equipment, should be included in the HDG system. According to the model -elaborated by the author- this strategy would generate the implementation of investments

6. The dissertation helps education as well by systemizing and examining the institutional and financial characteristics of the bed-patient-sector.

7. It provides something new even for the professional societies and organizations as well. The dissertation observes the events, and correlations based on the principle of sector neutrality. It can be instructive for other sectors as well. It can provide a contribution to formulate the development directions, to work out development programs.

6. Publications on the Topic of the Thesis

Articles and Studies:

Karner Tamásné [2001]: The Medical State of the Hungarian Population Reflected in the Externalities -*Economy & Society Vol.1-4. P.124-150*

Karner Tamásné [2003]: Health politics *Public Health Economics Review* Vol. 41. No. 5. p. 58-62

Karner Tamásné [2003]: The Role of Public Health Management in the Economy of Public Health, especially in the Erzsébet Hospital *Public Health Economic Review* Vol. 41. No.6. p. 55-64

Karner Tamásné [2004]: The Role of Public Health Marketing & *Management* Vol. 1. page 62-76

Karner Tamásné [2005]: Our Historical roots in the economy of public health, especially in the field of bed-patient-sector, *Public Health Economic Review* (under publishing)

Lectures at conferences:

Conference on Human Resource Management in Balatonföldvár [2003]: The situation of the Hungarian Public Health in International Comparison

Conference of the Day of Hungarian Science, conference at the West-Hungarian University [2003]: Depreciation in public health (in publication)

Responses at Conferences:

„The Situation of the Public Health in International Comparison” International Public Health conference Paris [2003]: The State of Public Health of the Hungarian Population (Prof. Dr. Gidai Erzsébet’s lecture)

„Efficiency and profitability in public health” international conference in Sopron [2004]:
National experiences of hospital financing (Prof. Dr. Dézsy József’s lecture)

Participation at Conferences:

”Health and Economics for the Younger Generation of Europe” MOTESZ conference
Budapest [2001]

„Commercialising Public Health – Public Health Enterprises” public health conferences of
World Economy Budapest
2002 „Long Term Health Politics or Changing Conception?”
2003 „Pharmaceutical Market Changes and the Healing”
2004 „Hungarian Public Health in EC”

„International Tourist-Marketing Conference in Sopron- Hungary’s Future in the
European Community
Sopron [2004]

Other Professional Activities:

Preparation of accreditation material for doctors, chemists – economist’s postgraduate
education

Preparation of accreditation material for public health management postgraduate courses

Statistics, microeconomics for doctors, chemists – economist’s postgraduate education

Organizing, arranging hospital visits, controlling compulsory courses for doctors chemists
– economists and public health management postgraduate education

Organizing education for doctors, chemists – economists and public health management
postgraduate education