

Health Research in Hungary

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I. Introduction

This report was prepared within the framework of the international Health Research Profile Project, initiated and coordinated by the Council on Health Research for Development (COHRED). The main objectives of the report are to summarize the characteristics of the present status of health research in Hungary and to outline the main changes that have occurred in the last decade.

2. Work methods

The statements of this report are based on data collected regularly by the Central Statistical Office (CSO) of the Republic of Hungary, using standardized questionnaires to obtain data from all types of research institutes. The data were processed in the CSO for the Health Research Profile Project. The data provided by the CSO were compared to those included in the annual reports published by central project funds, such as the National Scientific Research Fund and the research fund of the Ministry of Welfare/Health (1998).

In addition, personal interviews with key persons in health-related research and in the research to decision making chain in Hungary were conducted. They included:

- the chairperson of the Life Sciences Committee of the National Scientific Research Fund (medical sciences are supported by this grant);
- representative of the Ministry of Health, deputy head of the Minister's cabinet;
- representative of the Ministry of Health's Department of Research Organization, the Secretariat of Medical Research Council;
- chairperson of the Social and Health Committee of the Parliament of Hungary, previously Political Secretary of State of the Ministry of Welfare (1994-1996), Minister of Welfare (1996-1998).

A standard set of questions was used for the personal interviews.

3. Background

Health-related research has a great tradition in Hungary. Hungarian biomedical and clinical research contributed scientists to the international community, who were awarded the Nobel Prize (Bárányi in 1914, Szent-Györgyi in 1937 and Békésy in 1961). From the time of World War II until the end of the one-party regime and the planned economy system, in certain biomedical fields, Hungarian research could keep up with the most advanced science in the world (e.g. neuro-anatomy, biochemistry).

During this period some biomedical researchers were able to maintain their scientific independence and autonomy.

The health-related social sciences were in a considerably different position. For a long time sociology, research on social inequalities and certain fields of the behavioural sciences were no more than a tolerated branch of health research. Furthermore, due to the nature of the politico-economic system and its consequences on health care provision, some areas of health systems research and health economics were underdeveloped or non-existent.

The socio-economic changes at the end of the '80s and the beginning of '90s presented new challenges and tasks for health research. Hungary voted for a plural, multiparty political system and market economy. This transition took place in the last decade, in a historically very short period. At the beginning of the transition the deep economic crisis led to a 25% drop in the gross domestic product of the country. The load-bearing capacity of society decreased in parallel with this trend and the maintenance of previous research capacity seemed impossible in the long run. Stringency led to large-scale restrictive monetary measures in 1995. This, obviously, affected research financing as well.

At the same time, rapid social changes, restructuring of society, the occurrence of mass unemployment (a ten-fold increase in comparison to the mid-80s) and poverty, changing societal norms and patterns all posed new risks to the health status of the population. Life expectancy for men continuously decreased and, in certain age-cohorts of men, dropped below the level registered right after World War I. Table I. shows the trends of life expectancy at birth for both genders.

Table I. Life expectancy at birth for both genders

	1970	1980	1990	1992	1994	1996	1998	1999
Women	72,6	73,2	73,7	73,7	74,2	74,7	75,2	75,2
Men	66,8	66,0	65,1	64,6	64,8	66,1	66,1	66,1

Reform of the health care services system and new methods of financing health care raised new questions for system researchers.

Summary: the last decade's socio-economic transition brought about unfavourable changes in the financial background to health research and posed new challenges for health-related behavioural sciences and health care system research.

4. Governance of research funding

The main sponsor of health research in Hungary is the state budget, through several channels.

Table II. Contribution of the central state-budget to health research financing

Year	MUSD	m HUF	Gov't/Total (%)
1990	20,7	1310,4	89
1991	20,6	1538,1	86
1992	23,0	1818,5	86
1993	27,0	2485,0	92
1994	27,7	2912,6	89
1995	23,5	2949,6	90
1996	22,3	3398,6	83
1997	18,7	3491,0	88
1998	20,9	4481,5	84

Note: the components of the central budget are: the provision of institutions' budget, plus centrally allocated project funds.

Yearly average HUF/USD exchange rates from the CSO's official reports.

It is evident that the vast majority of total spending on health research originates in the State budget. Understanding central research management and priority-setting structures of the State helps to evaluate the role of health research in decision making.

The governance and coordination of research is a pluralistic, multi-actor sector in Hungary. Some institutions enjoy large-scale autonomy and independence, guaranteed by legislation. These are the Hungarian Academy of Sciences, the National Scientific Research Fund and all the higher education institutions as far as their research and teaching activity is concerned. Their budget is provided from the State budget as a central fund or through the Ministry of Education (research normative).

At the level of government, the perceived need for better coordination and for more effective, targeted utilization of available resources led to the establishment of the Science and Technology Policy Collegium in 1998. This is an advisory body to the Government, with several functions. Its main tasks are to take part in the preparation of government-level decisions on science policy, and to coordinate the distribution of government-level public funds for research. The Science and Technology Policy Collegium consists of the Prime Minister, who chairs the Collegium, ministers of key ministries, (such as the Ministry of Education, Economic Affairs, National Cultural Heritage, Prime Minister's

Office), as well as the presidents of the Hungarian Academy of Sciences, the National Scientific Research Fund and the chairperson of the Council of the National Committee for Technological Development (now the Deputy Secretary of State of the Ministry of Education). The recommendations of the College are built into the national research policy concept in the Ministry of Education, and the proposals are submitted to the Government by the Minister of Education.

The Scientific Advisory Board of the Science and Technology Policy Collegium provides the expertise for the preparation of recommendations by the Collegium and assesses the previous programmes and major research-type investments. It consists of leading scientists in the country, leading civil servants of competent ministries and representatives of research management organizations at the national level. The chairperson of the Board is the Political State Secretary of the Ministry of Education.

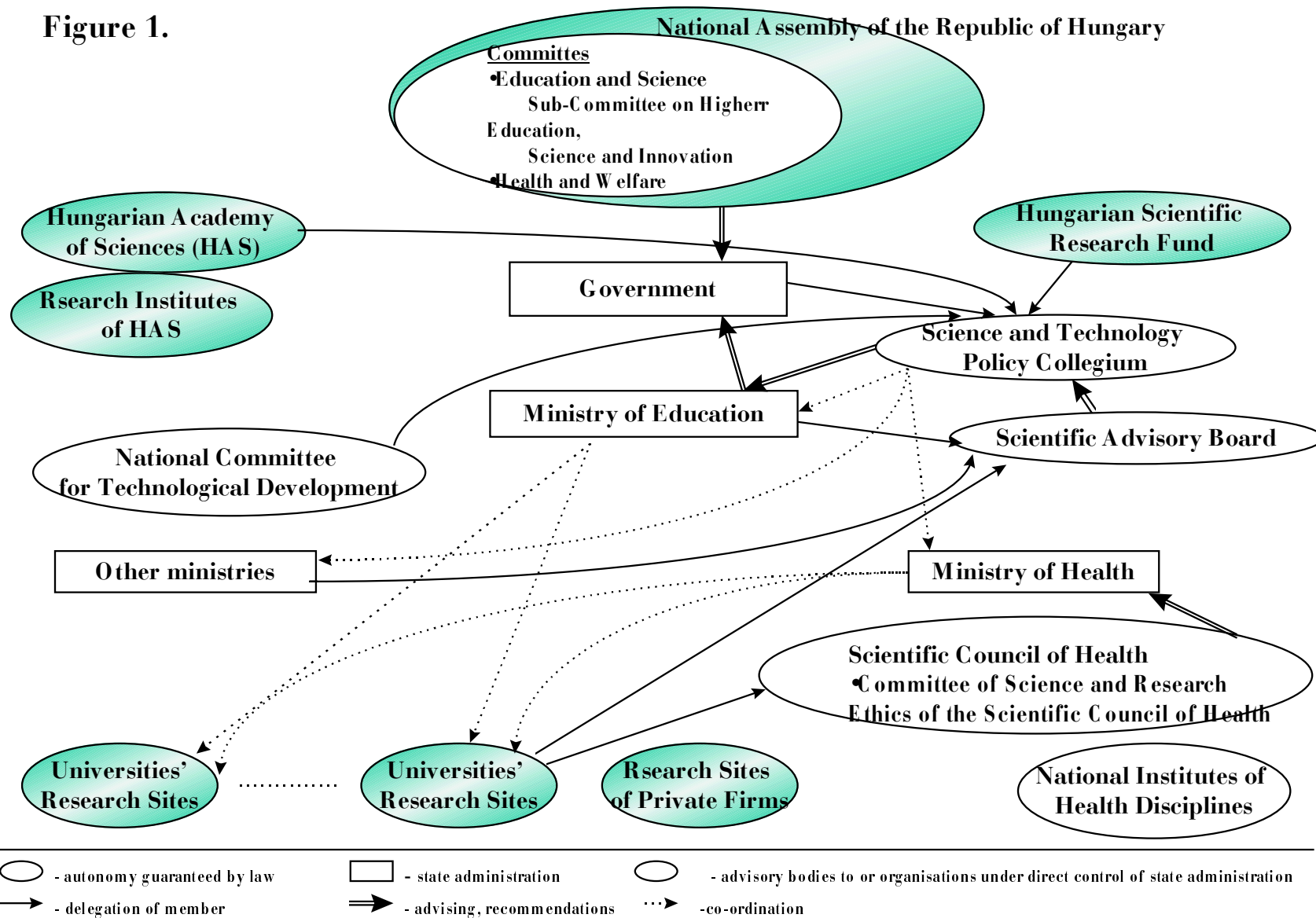
The composition of these structures makes it possible to assemble the necessary knowledge, experience and decision making competencies in the national level co-ordinating and decision making processes. Below the national-level coordination of science and research policy, the ministries are responsible for the coordination of public funds allocated to research in their field.

The role of Ministry of Education differs from that of other ministries, in as much as it ensures legal supervision of institutions of higher education. However, the universities, according to the Higher Education Act , are autonomous in their teaching and research activities.

The ministries have several tools to influence the direction of research activities within their competence, such as budget allocated to research sites through a competitive system. Furthermore, ministries establish advisory bodies, representing the scientific and research community in relevant fields. The recommendations of these bodies provide guidance for the wider research community. Some ministries maintain research institutes. However it is important to note that, in all disciplines or branches of science, the higher education institutions (universities or colleges) provide the majority of research output.

Figure 1. summarizes the main actors in science and research management at the national level, and the most important relationships among them. It also shows the actors in health-related research (for details see the following chapter).

Figure 1.



Research activity is carried out in higher education institutions, research institutions of the Hungarian Academy of Sciences, other public research sites in libraries, museums, and at research units of private organizations and companies. Most of the officially recognized research sites are in higher education institutions (1078 of the total 1680 in 1997). Less than 200 research units are located in private companies (1).

Research finance is provided through several channels. For higher education institutions the majority of the budget is provided through the Ministry of Education. The introduction of normative financing has influenced research activities as well - *research normative* (in small capitals) is included in the annual budget of the institutions - according to the research capacities they maintain and the quality and level of their research output. A large proportion of research expenditures is financed from central project funds, distributed on a competitive basis. The most important are the National Scientific Research Fund and the fund of the National Committee for Technological Development. Beside these, certain ministries provide research grants from their budget, mostly distributed on a competitive basis. In some fields of research (e.g. telecommunication technology) private companies are prominent sponsors of research in higher education institutions. The role of non-profit organizations and foreign donors is negligible.

Other publicly financed research sites fund their basic research activity from their budget (by the sponsoring body, for example HAS or ministry), but they are also entitled to participate in the open competition for central research funds. According to the calculations of the Hungarian Academy of Sciences, total research expenditures in Hungary were about US\$570 million in 1997, which is about 0.76% of GDP (1). The present government intends to increase this share to 1.5%, which is close to the average of European countries calculated in per capita spending on research.

5. Financing and management of health-related research

Health research fits into the structures described above. The total number of research sites was 217 in 1998. Most research sites are located in universities with a medical faculty, namely the Semmelweis University Budapest, the University of Debrecen, the University of Szeged and the University of Pécs. Until the beginning of this year, medical universities were independent. As of 1 January 2000, according to the amendment to the Higher Education Act, three of them became the medical faculty of large multi-faculty universities (Debrecen, Szeged, Pécs) and the Semmelweis University of Medicine merged with the Haynal Imre University of Medical Sciences and the Hungarian University of Physical Education (all located in Budapest), forming together the Semmelweis University Budapest.

The national institutes maintained by the Ministry of Health also make a considerable contribution to the overall health research output, mainly in clinical research and in the field of public health and epidemiology through the State Service of National Public Health and Medical Health Officers (ÁNTSZ). The Hungarian Academy of Sciences maintains one institution, namely the Institute of Experimental Medicine.

Private funds are present mainly in pharmaceutical research. However, the privatization of the pharmaceutical industry and the collapse of traditional East European markets at the beginning of the decade resulted in a fall in pharmaceutical research capacity in the country.

The financing of health research varies according to the type of institution. Higher education institutions' research expenditures are financed from the research normative, provided by the Ministry of Education. These sites are also the main competitors for central research funds at the national and sectoral level - the National Scientific Research Fund and the Ministry's fund. For example, in 1998 three quarters of all projects supported by the Ministry of Health's (MoH) fund were carried out by research teams located at one of the universities.

National institutes of health disciplines (e.g. National Institute of Oncology, Cardiology, Neuro-surgery) are financed from the MoH's budget and compete for central funds as well. In 1998 6% of MoH-supported projects were submitted by teams from national institutes.

The co-ordinating role of the MoH is carried out through different mechanisms. The research fund of the MoH supports research areas of high priority through a competitive system. The national institutes of health disciplines are under the supervision of the MoH and their research activity is determinant in some disciplines. The regulatory framework of clinical research is also the competence of the Ministry. The MoH maintains a consultative-advisory body to provide expertise in fulfilling these tasks. This is the Scientific Council of Health (ETT). In the field of health research it advises the MoH in setting priorities for national health research and major public health and health care development programmes. It evaluates the results of research programmes, as well as the scientific performance of institutions. Its 13 professional committees evaluate proposals submitted for grants, and its Committee for Science and Research Ethics is the bio-ethical advisory body of the minister. The Scientific Council of Health cooperates with other organizations and institutions, which are also stakeholders in health research, such as the National Scientific Research Fund, Hungarian Academy of Sciences, higher education institutions, etc.

Present priorities for health research in Hungary are:

- molecular biology and genetic research on disease patho-mechanism;
- cooperation between experimental research institutions and clinics, hospitals of research excellence;
- public health and epidemiology;
- experimental and clinical neural sciences, mental health;
- projects relevant to the Bone and Joint Decade;
- immunology and related fields;
- research into factors increasing the quality of life;
- support for research teams of excellence capable of obtaining and participating in European Union research grants and projects.

Annual support provided by the MoH research fund was 44,5 million HUF in 1998, which was about US\$208,000 (2). In comparison to overall health research expenditure, which is about US\$25 million in 1998, this does not exceed 1% of the total. If we consider that the utilization of main research financing funds - the universities' research normative and the National Scientific Research Fund - is not strictly bound to declared research priorities, and furthermore, that the mean annual support provided from MoH funds was 405 000 HUF per theme, which is less than US\$2,000, it is questionable whether this fund is able to influence the direction of health research towards the set priorities based on key public health problems of the nation and on current trends in health research.

6. Health research - figures and trends in the last decade

The total amount spent on health research is shown Table III.¹

¹ The amounts do not include teaching and administrative costs of universities, only the amounts allocated to research.

Table III. Health Research Expenditures 1990-1998

Year	Amount (million USD)	(million HUF)
1990	23,2	1466,9
1991	24,4	1793,8
1992	26,9	2124,5
1993	29,3	2694,7
1994	31,2	3274,5
1995	26,2	3298,9
1996	26,8	4083,6
1997	21,2	3958,7
1998	24,9	5338,3

The major share of this amount is internal funding, which means that it originates from Hungarian State or private sources. Table IV. shows the proportion of external funding within total health expenditures of the country.

Table IV. External Sources in Health Research

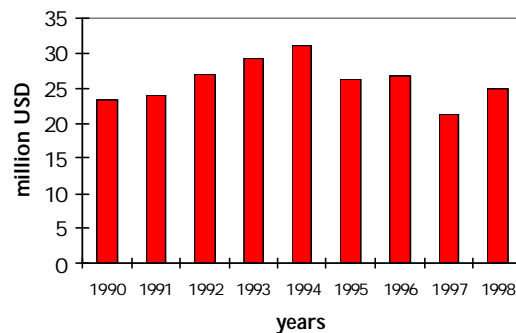
Year	mUSD	ext/total (%)
1990	0,1	0,5
1991	0,3	1,1
1992	0,7	2,5
1993	1,1	3,8
1994	0,8	2,6
1995	0,7	2,8
1996	0,7	2,6
1997	0,9	4,4
1998	1,5	6,2

The role of external funds has been negligible in Hungarian health research, on average less than 5% of the whole expenditure of research institutions. Most foreign funds come from the European Union, since Hungarian institutions are eligible to compete for most of these funds.

The diagram in figure 2. gives annual expenditure data. Since 1990 the total amount spent on health research has increased constantly, with a peak in 1994 exceeding US\$30 million.

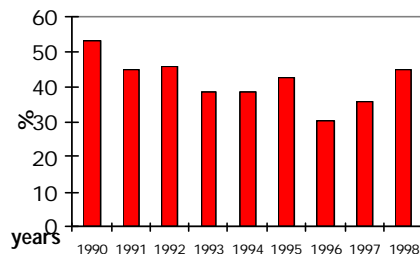
From 1995 - the year of monetary restrictive measures, the „Bokros-package“ - expenditures fell below the 1990 level in 1997. With the recovery of the economy and the improving position of the State budget, health research expenditures started to increase in 1998.

Figure 2. - Amount Spent on Health Research in million USD (1990-1998)



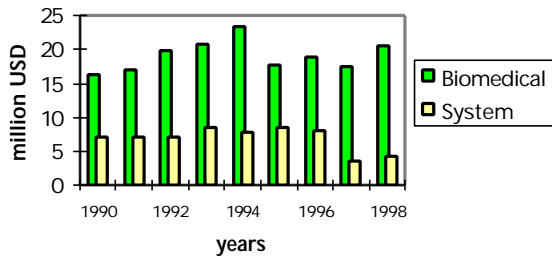
In the first half of the decade the proportion of centrally provided project funds within the total budget of institutions constantly decreased. There are two possible reasons for this. In the period of increasing expenditures, the universities' budget increased first of all. In the period of monetary restrictions, the central funds were relatively easy to cut, without immediately endangering existing research capacity. Figure 3. shows this trend.

Figure 3. - Proportion of Centrally Distributed Project Funds within the Total Budget of Research Institutes



From more than 50% in 1990 it fell to 30% in 1996. From 1994 onwards, project funding became an important element of research sites' basic budget, which means that the institutions often financed their overhead costs (staff, equipment maintenance) from the project funds. Since 1997 this trend has increased, mainly due to the „recovery“ of the central funds' budget. The balance of research has also shifted during the decade. The biomedical research budget grew dynamically from about US\$16 million in 1990 to US\$24 million in 1994. In 1995 the sharp decline in expenditures stemmed from the economic situation and restrictions due to budgetary imbalance. Figure 4. shows the trends between 1990-1998.

Figure 4. - Amounts Spent on Biomedical and Health System research (1990-1998)



Systems research was able to protect its position until 1996. The first half of the decade was the period of health care reforms. Health insurance schemes changed with new service financing techniques and changes in ownership of most of institutions.

Even during the period of monetary cut-backs, financing of systems research remained unchanged.

The background to this might have been governmental efforts to control overall health expenditures, by rationalising the health care system and the decrease in the consumption of services. At the end of the decade, the pace of reform slowed down, budgetary pressures on health services eased and systems research partly lost its importance.

Research in the field of health-related behavioural sciences is missing from the diagram. The reason is twofold. Firstly its budget is not easy to identify, since departments of behavioural science are located not only at medical universities, and a part of this kind of research was carried out at large science universities, where only a part of the departments' research subjects is related to health.

Furthermore, central project funds do not separate behavioural sciences. Some of the subjects are listed as social sciences, like demography, psychology or sociology. Some of them are among the life sciences, mainly clinical research in the field of health-related behavioural sciences.

Secondly, the estimated budget for health-related behavioural research is very low in comparison to

Table V. Yearly expenditures on different branch of health sciences million USD

Year	Behavioral	Biomedical	System
1990	0,6	16,2	7,0
1991	0,6	17,0	7,0
1992	0,6	19,8	7,1
1993	0,6	20,7	8,6
1994	0,8	23,5	7,7
1995	0,7	17,7	8,5
1996	0,7	18,8	8,0
1997	0,7	17,6	3,6
1998	0,8	20,5	4,3

biomedical or systems research. Table V. contains the annual expenditures by main branches of health sciences. It should be noted that, for the estimation of behavioural science research expenditures, the most optimistic assumptions were used. That means that, most probably, expenditures are overestimated. It is very low, even if we consider the amount spent on health behaviour research outside of the officially acknowledged research sites, such as polling agencies, etc.

Considering that, in Hungary, the leading causes of premature death are cardiovascular diseases and malignomas, and the risk factors of these diseases are mostly connected to the health-behaviour of the population (e.g. smoking, alcohol consumption, eating habits, etc.), the very low level of attention devoted to behavioural science research seems even more remarkable.

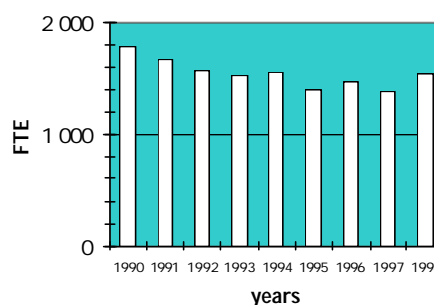
Hungarian science has always been able to produce high quality researchers, regardless of the actual status of the sector. This high quality and internationally competitive human resource provides the potential for survival, the viability of science in the country.

It is not surprising that the changes in past decade had a strong impact on research staff of health research sites.

Figure 5. shows the trend in the number of researchers at health research sites during the last decade.

Not surprisingly, the number of full-time equivalent (FTE) research staff matched the decline in financing. If we examine the change of calculated (FTE) staff and the total number of researchers employed, regardless of their conditions of employment, we see that the decrease of FTE-research staff was more evident than the decrease of total number. The most plausible explanation of this phenomenon is that the institutes tried to keep their staff, but, due to financial difficulties, they decreased the employed capacity.

Figure 5. - Number of Research-Staff of Research Sites 1990-1998 in Full-Time Equivalent (FTE)



While the number of FTE-research staff decreased from 1,789 in 1990 to 1,379 in 1997 (23%), the total number of staff dropped only from 4,210 in 1990 to 3,666 in 1996 (13%).

The trend in the number of women was similar to the overall trend for the staff, but the decrease in women was more distinct than that of the total number, about 23%. It is interesting to note that, in the first third of the decade, the number of women continuously

increased until 1993, but the fall, after the economic restrictions, was sharper than that of men.

Age-composition of research staff at health-related research sites has only changed slightly. From 1995 until 1998 the number of researchers in the lowest age-cohort (<29 years) decreased, and in all other cohorts it increased, while the total number of employed researchers increased during this 4-year period. This could be the result of the relatively low salaries in the health research sphere and, consequently, the declining attractiveness of this career.

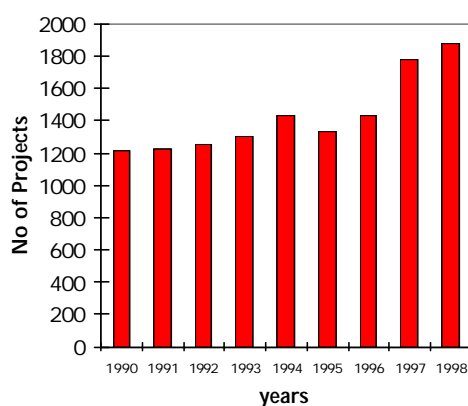
The qualifications of research staff, in spite of narrowing opportunities and decreasing finance, improved.

	1990	1998
Member of Academy	19	40
DSc	250	269
PhD, DLA, Candidate for science (PhD equivalent)	797	1018

Table VI. indicates the number of researchers with different levels of scientific degrees in 1990 and in 1998.

Figure 6. shows the total number of ongoing research projects at research sites.

Figure 6. - Number of Health-related Research Projects

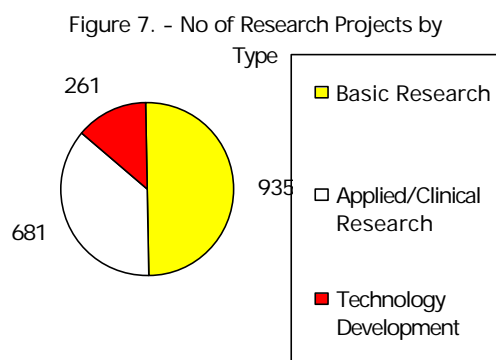


It can be seen that, while total research expenditure decreased, and total full-time equivalent human capacity followed this decline, the number of research projects kept increasing. The explanation for this can be found in the shift from larger, more resource-intensive projects towards smaller, simpler projects or the pressure on researchers to obtain funding and to apply for all possible grants, slightly changing the title and content of projects.

This phenomenon raises efficiency problems, i.e. the utilization of available, scarce resources and the impact of grant distribution policies on the efficiency of the system.

As regards the composition of research projects by their type of subject, almost half of them are basic research, as can be seen from Figure 7.

The data are from 1998. The most remarkable increase can be observed in the field of basic research, where the total number of subjects increased from 333 in 1990 to 935 in 1998, while the number of applied research subjects decreased from 713 in 1990 to 681 in 1998. There is some increase in the number of technology development subjects, from 165 in 1990 to 261 in 1998. From the rough data, we



may conclude that the effectiveness of utilization of research results has decreased in the last ten years (more basic research with less application topics), but this would be a rash statement, and the identification of underlying factors requires more detailed analysis (definition of the problems, changes in financing techniques, etc.).

Research on health inequalities does not belong to the preferred subjects. By analysing the curriculum of research projects, it can be concluded that only 1-3% of all subjects focus on this problem. 5-10 projects concern gender inequalities, the research on health aspects of poverty focuses on the health consequences of unemployment. The research on health status of the Roma ethnic minority involves a specific problem. A reliable methodology of research is being developed in the country, and in addition, research planning must respect the cultural differences of this minority, as well as the Constitution of the Republic, the spirit of which totally excludes any type of discrimination against people. 48 projects per year aim to investigate the health problems of Romas.

7. Health research and decision making

General impediments to the use of research, mentioned by several authors (5), as in many other countries, exist in Hungary too. The communication between the research community and health policy is random. The use of research results is influenced by the different time-scale of decision making and research, and time-effective methods (6), like rapid appraisal, are not used in Hungary.

However, health research has had a marked impact on policy making in some areas of health and health policy has repeatedly attempted to use scientific research findings in political decision making over the last decade.

Epidemiology has been widely used to assess the need and effect of health care investments, and epidemiological data are regularly used in decision preparation.

The National Environmental Health Action Plan is based on strong scientific evidence, gathered within the country.

In the period of health care reforms, foreign experience has helped shape decision making by providing a scientific basis for modelling the function of planned systems and sub-systems.

In the area of health care financing, the National Health Insurance Fund is a financing agency for publicly financed health care services. It examines the effects and costs of different treatment methods, and decisions on financing certain treatments, drugs, etc. are taken on the basis of relevant evidence. Most evidence is collected abroad, but there are examples and further commitment to produce such evidence in Hungary.

Evidence-based policy is a declared aim of the present Government (4), to base political decisions on research evidence as much as possible. The Research Institute for Health Development (EFKI) has recently been established with the aim of collecting, generating and interpreting scientific evidence for decision making, mainly in the field of health care research and public health. The EFKI collaborates closely with the Strategic Planning Department of MoH. It is planned to use scientific evidence at different levels of decision making.

Experience so far has been poor, since the EFKI has only just been established and is at the beginning of its regular activity. However, the position of the Institute within the state administration raises the question of its independence and relation to existing MoH research grants, which has a social medicine component.

8. Conclusions

- Health research has a strong tradition in Hungary in the field of biomedical research. The basic biomedical research capacity and results, in some areas, are among the best in the world.
- Health care systems research was closely connected to the last decade's health care reforms and as a result, the content and direction of research projects were strongly influenced by policy making.
- Health related behavioural science research is severely under-funded. The potential of this type of research to contribute to enhancing the health status of the population has scarcely been tapped.
- Most research capacity has successfully survived the period of socio-economic crisis, thanks to the well-developed survival techniques of research institutions or sites. The continuous pressure created by the scarcity of resources, which diverted attention of the research community from research to obtaining research funds, and the fragmentation of

research financing, probably led to a lesser effectiveness in the use of resources, but these factors are beyond the influence of researchers. This change of effectiveness would require further study.

- Coordination of health research is the responsibility of the Ministry of Health, but the Ministry has no influence on the allocation of the vast majority of resources.
- The financing of health research is fragmented, mainly provided by the State through various channels, and involving different distribution mechanisms and agencies.
- There are explicit priorities for health research, derived from the assessment of current trends in health research and the health status of the population, but the resources allocated to declared priorities are a negligible proportion of the total spent on health research.
- The priority setting mechanism is based on the opinion of representatives of the research community. The involvement of other stakeholders (communities, social groups, etc.) has not been formalized and is mostly neglected.

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