Health and Health Research in the Russian Federation: a historical perspective and a forecast

Prepared by Y.M. Komarov (Moscow, Russian Federation) and V.E. Tcherniavskii (WHO Regional Office for Europe, Copenhagen).

1. Background

The present article contains a brief historical perspective of the development of research in the field of health and public health in the Russian Federation, an assessment of the condition and level of this research and a look at prospects for the future.

Until 1990 many central institutes, since they were located in Moscow, did research mainly into the problems of the Republics of the former Soviet Union. It was expected that, with the disintegration of the USSR, the whole intellectual potential of central medical scientific institutions would be concentrated on the problems of health and public health of the Russian Federation. However, that has not happened, because of the severe economic crisis that has gone hand in hand with the disintegration of the Soviet Union and the creation of the Newly Independent States. This has severely limited investments in medical science, which has undergone rather significant change as a result of insufficient State funding.

Firstly, the brain drain to other countries has increased. Second, the amount of fundamental research has sharply dropped and applied research has increased, which has made additional sources of financing possible. Third, on the one hand, the amount of research commissioned by the State has decreased significantly, and, on the other, the share of research that yields a profit has increased.

2. Basic information

The Russian Federation, as is well known, is located on the Eurasian continent, bordered by countries, which were formerly part of the structure of the USSR, as well as by Norway, Finland, Poland, Romania, China and Mongolia. The Russian Federation is a federal multinational state, with 89 members, which enjoy considerable independent rights. In the Russian Federation the population consists of more than 70 nationalities, with important differences in the number of each. The population of the Russian Federation, owing to a low birth rate and high mortality rate, has systematically decreased, and as of 1 January 2000 stood at 145 million, that is 400 000 fewer than 10 years ago. Over the last decade the birth rate has decreased from 14.6 to 8.4 per 1000 population, and mortality has increased from 10.7 to 14.7 per 1000 population.

3. Historical data

In Russia before 1916, when the State Insurance Governing Board was set up with the status of an independent ministry, there was no clearly defined health care system. It existed in a rather diffuse form: between 1912 and 1930 there were separate medical services for factories, prisons, the military, communications, the navy, and urban complexes. For this very reason the studies on public health began much later than those on other key health problems.

It is thought that the first substantial study of the birth rate, migration, marriage and mortality rates in Russia was conducted by the famous scientist and founder of the Russian Academy of Sciences, M. Lomonosov, in 1761. It took the form of manuscripts under the title of “Reproduction and preservation of the Russian people”. However, publication of this manuscript was banned by the Censure Committee until 1819, because it contained views on the demographic situation that did not comply with church ideology of the time. Then, for the next 50 years, only isolated, disconnected studies on health issues in Russia were conducted. It was only in Saint Petersburg in 1819 that K. German’s book on “Statistical studies of the Russian Empire» was published, in which, for the first time in Russia, a detailed table of mortality for the Orthodox population appeared, named by the author as the “Table of vitality”. In the second half of 19th century, data on health were already presented, not just in a descriptive form, but in analytical form too, including data processed by mathematical methods. From the population statistics of that period the health statistics were separated and enjoyed special development at the turn of the 20th century, in the first place under *zemstvo* conditions. *Zemstvo* was a unique system of local self-government that existed within the framework of centralized and autocratic government

The longest running study of population morbidity at the end of 19th century was conducted in the Moscow province by E. Osipov, and lasted from 1872 to 1895. Later on, these studies were continued by

P. Kurkin et al. It is not our task to describe all public health studies. We will simply note that after the Civil War (1920), special emphasis in these studies was placed on studying hygienic conditions of the population, the distribution of epidemic infectious diseases, and living conditions. Later attention focused on work in the area of physical development, general morbidity, occupational morbidity and morbidity leading to permanent or temporary disability, mortality and the reduction of life expectancy. We should note that in the 1920s, because of the establishment of the State public health system, pioneered by N. Semashko (Sir William Beveridge, as is well known, described this system in 1948), studies in the field of public health also underwent further development. Thus, at that time, two branches appeared practically simultaneously in Germany and Russia: health statistics and statistics on health care, which were harmoniously introduced as a new science created in these countries - social hygiene and health care management, which are devoted to the health of the population and public health.

In the Russian Federation studies in this field are carried out through the efforts of a number of central State scientific research institutes (Semashko Institute of Health Management and Economics, the Medsoceconominform Public Health Institute, the National Centre of Preventive Medicine), epidemiological subdivisions of the model State scientific research institutes (for instance, tuberculosis, diabetes and others), corresponding chairs in more than 50 medical teaching institutes, some non-commercial and nongovernmental organizations (for instance, the Moscow Institute of Public Health), and isolated territorial scientific groups, created by the institutions/ bodies of health management .

On average, nearly 70 candidates and 30 doctoral theses a year are presented on problems of public health and health care, comprising the findings of serious ongoing studies and developments. The main areas of the study are coordinated by the Scientific Board of the Russian Federation Ministry of Health (for its subsidiary scientific and educational institutions) and the Russian Academy of Medical Sciences.

Planning scientific studies is implemented “from the bottom up”, whereby scientific institutions, through corresponding sections of the Scientific Board of the MOH and departments of the Academy of Medical Sciences, submit their suggestions for approval, so that the scientific themes can obtain appropriate funding. The principle of a State order, under which an application for research comes from the customer, has not yet been introduced in the Russian Federation.

4. The structure of medical science in the Russian Federation

The basic scientific potential of the country is concentrated within the framework of the Ministry of Health (MoH) and the Russian Academy of Medical Sciences (RAMS). In RAMS more than 30 institutions deal mainly with fundamental research in the fields of medicine and biology. A few institutes of RAMS deal with research on public health and health services, such as the Semashko Institute of Social Hygiene, Economy and Management , the Oncological Centre , the Cardiological Centre and others. In the MoH there are 95 scientific institutes and centres, 20 of them dealing with research in narrow fields, and 3 of them, namely the Centre of Preventive Medicine, the Central Institute of Public Health (formerly the Medsoceconominform) and the Federal Institute of Medical Problems of Health Training, handle interdisciplinary research. Over the last few years, the number of scientific institutions in MoH has decreased by 11, and the number of researchers from 24 000 to 15 800. In the conditions of financial instability and low wages, many workers in scientific institutions have moved to jobs in the commercial sector, unrelated to medicine. The average age of scientific staff has markedly increased, and the older researchers often use old knowledge and do not quite grasp new ideas, technology and developments. Researchers have been left practically without support staff. At the same time a certain scientific potential has been maintained, since half of all researchers are doctors or doctoral candidates. Thus, if there were a move to restore medical science, with appropriate investments, it would be possible in a number of areas of public health to upgrade the level and quality of scientific research. Moreover, in medical teaching institutions (there are 56 such institutions in the Russian Federation) health and public health research is conducted by appropriate chairs and research divisions created in these teaching academies. Most scientific medical institutions are concentrated in Moscow, St. Petersburg, Novosibirsk, Kazan and Nizhni Novgorod.

5. Financing of the research centres

The period from 1992 to the present has been an especially difficult time for scientific research in the country. From 1992 to 1996 financing of science in the Russian Federation was cut sevenfold, and the share of GDP earmarked for expenditures on science in 1999 was the same as for 1946-50 (post-Second World War period). From 1992 to 1999 the number of scientific employees in the country was more than halved. This occurred mainly in fundamental research; the losses in the medical sciences were not as significant. Many scientific medical institutions, due to a lack of state funding, have been compelled to earn their keep through payment for fast-growing services in the community. Institutes with clinics are busy treating patients on a paid basis. Other institutes sell scientific products and are actively engaged in commercial contracts for doing research, giving examinations etc., and have handed over a part of their premises for rent to commercial set-ups. All this has naturally had a negative effect on the level of research and future prospects.

The basic sources of financing of scientific research in the field of public health in the Russian Federation are:

- the State budget (the biggest share). The overwhelming majority of medical institutes in the country are financed by the Ministry of Finance (the Department of Science, Culture, Education and Public Health) through a treasury system where MoH and RAMS are represented. This finances payrolls, throughout the year, for a number of employees on the basis of the average rate. The budget covers wages (which are rather low), taxes, and part of the costs of materials and local municipal payments.
- National research funds (grants) on a competitive basis between applicants.
- Additional services.
- International support (WHO, bilateral contracts, intergovernmental agreements, etc.)
- Participation in international projects (World Bank, EU/TACIS, Soros Foundation, etc.)
- Individual initiatives in receipt of grants, appointments as experts etc.)

6. Legislative basis for the development of public health research.

In the law passed by the Russian Parliament in 1993 on *The background of legislation in the Russian Federation on the health of citizens* , the basic priorities for public health research were identified. In the resolution adopted by the Russian Government on 5 November 1997 on *The concept of development of public health and medical science in the Russian Federation* the main problem areas of medical research were outlined as:

- The formulation of a strategy to promote and strengthen the health of the population; the development of a scientific basis for combating the most widespread diseases.
- Fundamental research to generate new evidence-based knowledge about health and diseases, and human ability to live and adapt to conditions in the environment.
- The development of new methods for prevention, diagnosis and treatment of diseases, to increase the duration of active life.
- The development of new types of structures for medical care and the management of public health services.

To attain these objectives it is necessary to achieve the following:

- concentration of technological potential in priority areas of medical science;
- more targeted programme planning, increased quality of expertise in research, and stricter ethical control of how research is carried out;
- budgeting and financing of fundamental and applied research on a competitive basis;
- State support for scientific centres and teams, including a large contribution to the development of domestic science and the use of extrabudgetary resources (international projects, funds etc.);
- development of regional scientific divisions, development of programmes and the conduct of research;
- increased communications between science, engineering and practice;
- improved legal mechanisms for the development of medical science;
- development of technological business, creation of small enterprises and pilot productions;
- protection of the intellectual property of researchers for the findings of their scientific activity.

There are a number of resolutions endorsed by the Government of the Russian Federation:

- *Urgent measures to strengthen State support for science in the Russian Federation,*
- *State accreditation of scientific organizations,*
- *Concept of reforming medical science.*

At the moment Parliament is continuing discussion of two other Bills: *Public health services in the Russian Federation* and *Development of medical science in the Russian Federation.* On 15 March 2000 the Advisory Board of the Russian MoH discussed some of the results of ministerial activities in 1999 and stressed the need to develop the scientific potential of research institutions and raise the prestige of medical science in the Russian Federation.

7. Studies in the area of public health

In recent years public health studies have concentrated mainly on the following areas:

- reproductive health, health of pregnant women and newborn children;
- health of children and adolescents;
- prevalence of certain diseases and mortality due to them;
- causes and factors of premature death of the population;
- health of the elderly;

In general, these studies are not of a descriptive nature, but take into account the influence of a number of factors and conditions (environmental, social, psychological, behavioural and other) on health, although we often come across work characterizing the influence of one or other factor on some specific disease.

Public health studies are based, as a rule, on an adequate statistical base, using a pre-determined number of samples, conducting a multistage selection, determining the representativeness of the sample, and using appropriate methods of mathematical analysis and modelling. At the same time, the methods employed are rather out of date: probability approaches, cluster analysis, multifactorial analysis and average and long-term forecasting are poorly used. The sample size is determined by predicted values of deviation from the mean; evaluation of validity is determined by Student's t-test, and relationships by a chi-squared test or by means of conjugation coefficients, i.e. methods dating back 30-40 years. But even these studies, conducted in such a way, provide new understanding of the subjects and phenomena under study. If a number of years ago the highest priority problem in health of the Russian population was premature mortality, particularly among men, linked mostly to alcohol consumption, then lately health problems of children and adolescents have become front-line priorities. The sharp decrease in the birth rate in the country is caused mainly by a real reduction in fertility, and not by the reduction in the number of women of childbearing age. The effect of that will become apparent only in the future, since the proportion of the female population under 14 years of age has decreased during recent years by 3%. At the same time, the average life expectancy among women has been decreasing, for instance, during the last 6 years by 2.3 years. However, despite this significance, the main problem is not a drop in fertility and the birth rate, but the poor health of newborn children.

It is important to note that, in public health studies over the last 5-7 years, there has been a trend towards better quality and increased validity of the results. The number of selective examinations of the population has increased, longitudinal and cohort studies have become more widely used, the risk groups and problem situations have become more clearly identified. Studies and their results became more internationally comparable, due, to a considerable extent, to collaboration with the Centers for Disease Control and Prevention in the USA, implemented within the framework of bilateral scientific research cooperation between the Russian Federation and the USA, with the support of USAID and other organizations.

Studies in the field of public health have been gradually shedding their political dimension, oriented towards proving the advantages of public health, and are becoming more focused on the most vital public health issues.

- Firstly, there are issues of reforming the health system as a whole. In this context health care must be made more available, oriented towards prevention and early detection of diseases.

- Second, priority should be given to development of primary health care and general practitioner services, i.e. the most important sections of the health care system. The efficiency of the remaining, more specialized levels of health care, depends directly and entirely on how primary health care functions.

- Third, there is a need for restructuring of the hospital network, as well as improvement of the way the outpatient facilities and services operate, providing first aid and emergency care.

- Fourth, attention should be given to further development of primary, secondary and tertiary preventive services, the improvement of the natural and social environment, and the promotion of healthy lifestyle and behaviour.

- Fifth, work is needed to ensure quality health care and to introduce new technologies, including cost-effective and clinic-organizing technologies.

- Sixth, the efficiency of the health system as a whole, and of its separate services and facilities, needs to be increased by reducing the expenses and improving the results.

It must be noted that specialists in public health are not necessarily well trained in scientific methods, and the standard of studies in this sphere is much lower than in the area of health care for the population. In the sphere of public health, longitudinal and specially organized selective studies are used relatively infrequently, and the analytical mechanism used is often simple and narrow. In spite of efforts by its various supporters in the Russian Federation, clinical epidemiology has not been much used, and this has significantly impoverished clinical studies and developments. As a result, foreign databases are currently used as the evidence base, because the national ones have not yet been created and data for them have not been collected. This is why the protocols and guidelines being developed in the country, in the majority of cases, are based on the opinion of experts and specialists, rather then on hard evidence and proven cases.

On the one hand, a number of studies have been carried out in the area of public health, sufficient to bring about some necessary changes in practice, but on the other hand, they are still too few to determine State policy in this sphere. It is not by chance that in the Russian Federation there is still no elaborated and adopted intersectoral (rather then branch-based) complex national programme of “Health for all Russian citizens”.

Among the major studies in recent years on public health in the Russian Federation emphasis can be placed on the ongoing work to define priorities in health, and hence to set priorities for the health care system. The morbidity studies are also very important, linked to a general population census and the long-term study of risk factors for cardiovascular diseases. Many studies on the development of separate health care services – anti-tuberculosis, endocrinology, allergology, pulmonology etc. - have been implemented at the regional level. The results of studies, proving the advantage of general practice versus the system of district physicians and paediatricians, are also very interesting. Particularly valuable is the scientifically approved evidence of health care reform based on specific conditions.

Unfortunately, quite often the results of scientific studies are not widely known and are not used in managerial decision-making. For instance, studies in the area of health insurance were not taken into consideration in the creation of a highly complicated and inefficient model of compulsory health insurance. The problem of tuberculosis is very fashionable currently, and a federal programme has been created, which covers practically all aspects of the problem. It is partly financed by the State, and additional resources are being attracted from USAID, the Soros Foundation, etc. At the same time studies show that the problem of tuberculosis in the Russian Federation is not a new one and that in 1980 the TB morbidity was 11% higher than current levels. The same studies show that in the majority of recently detected cases, the number of untreated cases has been growing, and mortality grows accordingly. This results from the sharp decline in the whole system of prophylaxis during the last decade, target examinations, check-ups, early detection of disease. Besides, studies show that people with tuberculosis are concentrated mostly in 6 of the 89 regions of the Russian Federation, and that practically half of all prisoners suffer from tuberculosis. From this we can infer that the key questions in reducing the tuberculosis prevalence level are; restoration of an early detection system and intensive treatment of patients in prisons or on release.

Another example of not using the results of studies and scientifically proven priorities is a programme of state guarantees for free medical care. This is an extremely important programme, which defines the types and amounts of assistance for the population. Though the Government approved the programme, it cannot be applied in any territory of the Russian Federation, since it has only been financed at a level of 30-60%. This is why government authorities face the dilemma: either of clearly admitting the infeasibility of implementing the programme and reducing the services guaranteed, bringing them into line with the real financial capacity; or of selecting, within the programme, essential priorities, that is to declare that the programme, as approved, cannot cover everybody. Priorities could for instance be based on health status e.g. free medical care would be provided to patients totally dependent upon the health care system, for instance those suffering from tuberculosis, diabetes etc.; or on the level of health care, e.g. primary health care could be provided free of charge, since about 80% of all health problems can be solved at this level; or on social considerations, e.g. priority could be given to socially vulnerable groups. In other words, State medical care need not be planned for everyone at the same level, but should be differentiated.

Unfortunately, there have been no scientific studies of choice of priorities for the programme of State guarantees. There are many scientific studies that have been under-used and underestimated in terms of their role in solving practical problems in public health in the Russian Federation. This is in part connected with well known differences in approach between politicians and scientists. This is why it is important to involve politicians in any study from the very beginning, since there would then be more chance of implementing the results.

8. Future development of studies in the area of public health and health care system in the Russian Federation

Analysis of overall trends in studies in public health show that the reliability and validity of their findings are increasing. The number of costly general studies is decreasing while the number of selective and randomized controlled studies is increasing. This, in turn, will require a broader knowledge of probability approaches, and methods of classification of the phenomena under study. The role of officially collected health statistics - in which only data required for health monitoring and the identification of health problems must be included - will decrease, and more in-depth selective studies will contribute to scientifically proven solutions to defined problems.

Another important issue is ensuring that the terminology and definitions are in compliance with international usage; the first steps in this direction have already been taken as in the example of the recently published Russian-American glossary on the quality of medical care. Clinical epidemiology and evidence-based medicine will certainly be further developed, which will result in the building of a network of special centres on this problem. More attention will be paid to groups at greater risk, to the study of risk factors, longitudinal and cohort studies, which can serve as a serious base for the improvement of the health care system. A particular role, with special regard to the long-term financial deficit, will be assigned to priority-setting studies. We would like to think that new scientific schools in the area of public health and health care system will appear in the Russian Federation, and that contacts with leading western centres will develop successfully.

Studies in the area of public health and the health care system, will take on a more coordinated nature, in as much as a national programme of “Health for all Russian citizens” must be elaborated. The motto “For a healthy Russia” can become an overall national idea, uniting different groups in the population. Currently society desperately needs a rallying of efforts around the aim of health of the people (if there is no health, then there will be no economic development).

Thus, by a favourable concurrence of circumstances (both political and economic) we may expect a more active development of studies of health and the health care system in the Russian Federation.

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