

Раздел III

СОВРЕМЕННЫЕ АСПЕКТЫ МЕДИЦИНСКОГО ОБРАЗОВАНИЯ

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GENERIC FINDINGS AND PERSPECTIVES OF RESEARCH ACTIVITY IN A MEDICAL UNIVERSITY OF KAZAKHSTAN

SUMMARY

The article discusses the current status of the Kazakh national medical university. S.D.Asfendiyarov putting indicators on materials research and innovation activities of the university for the period from 2011 to 2013. Analysis of key indicators research university identified key results and prospects of further development of university science.

Key words: higher education, university, medicine, indicators.

Currently, scientifically equipped economy is in demand in Kazakhstan, therefore, enhanced capacity of research and stable transition of leading universities to the academic and administrative independency is required. This implies that in the long-term the medical universities of Kazakhstan will be transformed to research-orientated universities with enclosed multiple research centers.

Experience of developed countries suggests that the lack of research sources of the academic organizations leads to ageing and poorly developing research teams as well as to decrease in quality of education, subsequently resulting in low employability of graduates [1]. Thus, resulting in inadequate quality of university education, comparatively to international standards and, in its turn, leading to insufficient research skills of the medical graduates.

Integration of research and educational activities at universities (e.g. Western practice) [2] will have the following benefits: (a) advanced quality of education and training of research staff with skills, up to date research awareness in science and technology, practical experience of research project implementation throughout the learning process; (b) accession of research staff with skillful graduates; (c) efficient use of funding, human, and tech-

nical resources throughout the research implementation and training; (d) reinforced collaboration between scientists and private business entities; (e) successful and effective implementation of research findings and technologies in practice.

The analysis was performed using the example of Kazakh National Medical University named after Asfendiyarov (KazNMU). KazNMU was established in December, 1930, and is the oldest Medical University in Kazakhstan. Currently, there are 1542 affiliated academics, 28 doctorate students, 114 M.Sc. students, 2025 internship students, 7094 undergraduate students.

Methods:

In order to improve the ranking of medical universities, the Republican Centre of Health Care Development at the Ministry of Health Care has developed the following indicative criteria of research quality at universities: (a) the number of projects funded by governmental, international, private bodies and amount of funding, (b) number of patents, (c) number of publications in international peer-reviewed journals, (d) number of citations in databases such as Scopus, Web of Knowledge, Google Scholar, and other RISC, (e) commercialization, (f) development and implementation of new tech-

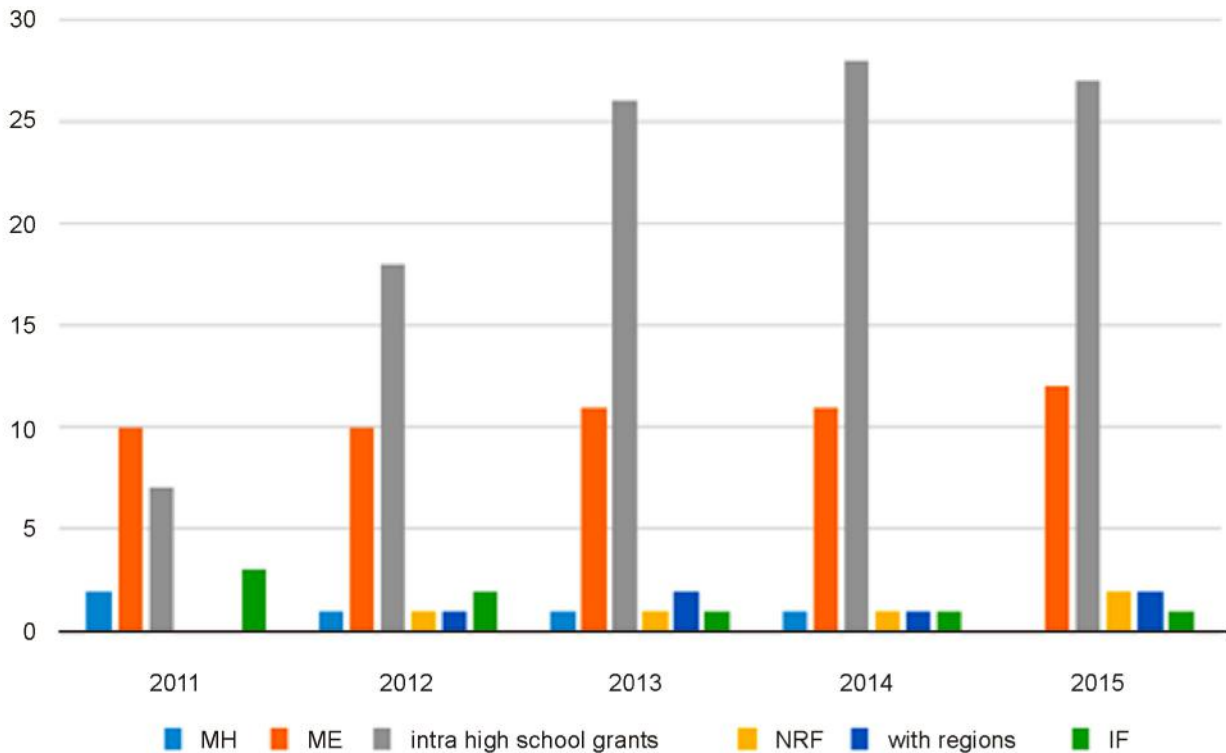


Table: Dynamics of scientific and technical programs classified by funding source for period of 2011-2015 (MH – Ministry of Health; ME – Ministry of Education, intra high school grants, IF – Internal funding, NRF – science and research funding bodies, with regions)

nologies, (g) number of oral presentations at international conferences by staff and students at the University departments made 265 applications to various funding competitions with a potential value of \$7.6 million as the result 42 projects has been funded and 32 projects are awaiting funding decision.

University staff actively participates in international and national conferences, congresses, and seminars. In 2013, the representatives of our university participated in 256 conferences, 5 of which are international conferences organized at the KazNMU premises.

746 empirical research articles were published in Kazakhstani journals, 22 in international peer-reviewed journals with high impact factors, and 7 systematic reviews.

103 departments\ modules and laboratories participated in research activities. Research Institute of Fundamental and Applied Medicine has been actively functioning, [1] certified laboratory research clinical diagnostic laboratory (NKDL), clinical and experimental laboratory (CAL), the center of the collective republican importance (NBI), and research and education centers, temporary research teams formed to implement

projects within the prioritized, fundamental and applied scopes.

Table: Dynamics of scientific and technical programs classified by funding source for period of 2011-2015 (MH-Ministry of Health; ME – Ministry of Education, intra high school grants, IF-Internal funding, NRF – science and research funding bodies, with regions).

The most important criterion of the research quality is the amount of received funding. By the end of 2013, the total amount of research funding constituted 3 million (USD). The research funding was received from Ministry of Education and Science (48 %), Ministry of Health (18.65 %), Other sources (29,68 %), international sources (1.55 %), National Agency for Technical Development (NATD; 1.79 %).

Amount of funding for research activities at KazNMU was steadily increasing: 24.43 % in 2011, 37.52 % in 2012, and 38.05 % in 2013. In recent years, a small amount of funding was received from NATD, JLC Desalination Factory «Caspian» (2 projects), Mangistau Regional Dental Center (one project). Thus, the research resources at the University are almost entirely formed by the governmental budget funding.

Majority of Faculties members are not interested in active participation in research projects due to inadequate payment rate. Thus salary rate is proportional to researchers experience and not to the share or responsibilities within the project. As well as this, salary rate is generally very low. For instance, a principal investigator, often Professor or Ph.D. is given 200 USD when the amount of duties and responsibilities is immensely high.

Relatively small minority (n=388 in 2011; n=331 in 2012; 418 in 2013) of faculties members are actively engaged in research activities. Thus on average, only 25-27 % of researchers at the University was actively involved in research projects throughout 2011-2013. The number of active scientists is about 30 % of the total number of affiliated staff, which includes teaching staff who is actively engaged in research. On the other hand, early career researchers and PhD candidates represent a good potential for research.

From the standpoint of increasing the scientific potential of universities young teachers from among the teaching staff – this is a very promising medium. From one year to the research activities are undertaken the same eminent scholars, whereas the percentage of young researchers each year decreases, which leads to a lack of staff rotation and aging PPP University.

Teaching load of the faculty of the University of not less than 800 hours per year, this leads to a decrease in employee motivation to research activities. Many teachers try to solve financial problems concurrently (20 % of total staff), which leads to greater congestion and a lack of time to prepare for the learning process.

Reduce the teaching load for teachers can be by bringing to conduct seminars/labs students of senior courses, residents, interns, undergraduates, doctoral students (by Western standards). The latter can pay for teaching, depending on the level of education, which would compensate for paying for their education. Thus, unity would be achieved by educational and research activities of the teacher and these issues need to be adjusted very flexibly, with the participation of the teacher in science and technology project to reduce the teaching load equivalent to the employee.

Over the past years, the university opened three laboratories: access center (MSC) of the national total (genomic laboratory equipped with equipment for PCR), scientific clinical diagnostic laboratory (NKDL) is licensed, Science and Education Labo-

ratory (NOL), who spend huge work on the implementation of scientific competence in the educational environment. However, even here there are a number of outstanding issues: the technological gap in quality and equipment of scientific instruments, lack of standardized equipment, consumables, bureaucracy and economic services, which leads to deterioration and prolong the research work. Preserved vivarium with laboratory animals: rats, mice and rabbits, but few clear lines of animals needed for example to conduct genetic research.

Commercialization processes are still terra incognita for university staff, so a transfer of new technologies has been licensed only laboratory of ecology and general hygiene, which uses American and Russian design calculation a security risk assessment of industrial emissions, and the only one in the country has an agreement with the industrial oil-extracting enterprises Shevroil, Shell, Texako. Today in the university is missing not only the patent department dedicated to the valuation of patents, license agreements, and demand for new developments among manufacturers, but also patent engineer. Although the payment of examination of applications for inventions and patents granted over the last year were due to the enterprise, but in the active state on the strength has 12 patents and are not supported in the future, so as patents that serve employees have no investment interest in business structures. Most patents are patents innovative character, ie, improved versions of the prototype, such as the last three years has been issued 71 patents (2011 – 22 patents, 19 patents in 2012, 2013 – 30 patents) of these patents for three, one copyright certificate and one Eurasian patent.

Must involve not only the state budgetary resources, but also by private investors, business structures. The most acceptable is the creation of small innovative enterprises, KazNMU to implement the idea to the final product, in demand by consumers. Create a commercialization center with KazNMU can lead to the organization of small enterprises engaged in the production based on technological developments of our scientists. This will stimulate innovative ideas and their transfer to the goods, services and technology.

Difficult for most scientists is to pay publication of research results due to the commercialization of many scientific periodicals. Not all project managers lay in the cost estimates article on brokerage firms to publish research findings to help projects in refereed journals with high impact fac-

tor, and for self-promotion, publications require fluency in English.

The number of joint publications university employees reached over the years: 2011-1150, 2012-1433, 2013 1190, and the number of publications in refereed journals was about 6.8 % of the total. Unfortunately, the number of publications in international journals with high impact factor remained consistently low, at 1.84 % of all published works.

University Guide developed incentives and payments for publishing articles depending on the impact factor peer-reviewed foreign journals and they are quite weighty on Kazakhstan's standards, but not completely cover all the costs of publication, which also leads to a decrease in interest from potential authors. Of course, in some cases, the university is sponsoring firm, commercial and financial structures. But it mainly concerns the costs associated with the publication of collections of materials of scientific conferences held under the auspices of the University, as well as pay a fee for the participation of employees in scientific forums, including foreign ones. In fact, on the establishment of the university cost accounting published magazine «Herald KazNMU them. SD Asfendiyarov», included in the list of publications recommended KKSON RK for publication of research results.

First in 2013 were put figures cited publication (Table 1) made in the walls KazNMU, indicating the high quality of the publications staff and students KazNMU interest and the global scientific community to Kazakhstan science. Such high figures were obtained, despite the fact that many employees at the time of its publication in peer-reviewed journals with foreign high impact factor does not represent its corporate membership (affiliation) to KazNMU. Besides, it was possible to raise citation PPP University by registering in electronic research library (elibrary.ru), just RISC registered about 100 employees from 1542, and only 40 employees have registered publications. In a survey revealed that many employees are afraid of their low performance in the citation and avoid registration by all means.

The largest volume of research carried out by a number of accounts for university departments: Department of Public Health – 22 %, 20 % structural units, the Department of Internal Medicine 16 %, 12 % Department of Pharmacy, the remaining divisions, respectively.

Departments of the University took an active part in the invention and patent activities for 2013:

Department of Pharmacy 47 %, 20 % dentistry, then morphological discipline and internal medicine for 10 %, 7 % structural units, 3 % pediatrics and surgery. However, it should be noted that most of inventive activity was to improve the existing prototype (innovation patents), but the inventions of Kazakhstan and Eurasian patents virtually no (5 over the last three years).

Perform research on economic agreements were primarily in small quantities.

Create an optimum intellectual innovative educational environment promotes a deliberate policy in international activities.

In 2013, more than 140 university employees, scientists and students participated in international scientific congresses, symposiums, conferences, exhibitions, conducted research, education and training abroad. Cooperation was carried out with various foreign universities, institutions and organizations, in particular, there are agreements on scientific and technical cooperation with the University of Nebraska, BUCK Institute for Research on Aging (USA), University of Cumbria, Manchester Metropolitan University (UK), Babes-Bolyai University (Romania), Yerevan State Medical University name .M.Geratsi (Armenia), the University of Milan (Italy), University of Gothenburg (Sweden), the International University of Kyrgyzstan (Kyrgyziya) also signed a memorandum of cooperation with the Lithuanian University of Health Sciences (lountza).

Work continued on the project TEMPUS-»Qualifications framework for sustainable forestry and lifelong learning- hand. Professor. Toguzbayeva K.K.

University scientists was published by the publishing house of the University 7 monographs. In various leading local and foreign journals published more than 746 scientific articles and reports. Continue to enter the journal «Bulletin KazNMU», «Dental Kazakhstan», «Morphology», where the founder is KazNMU planned electronic magazine in English Science, Education and Medicine.

Data were analyzed by publications in peer-reviewed journals with high impact factor over the last three years, it became clear that the most productive Department of Public Health – 37 %, the Department of Internal Medicine 23 %, 14 % Department of Pharmacy, 11 % morphological discipline, pediatrics 5 % and the remaining 2 % of departments.

Preparation of scientific and scientific- pedagogical personnel carried out through the Depart-

ment of PhD on 4 specialties (pharmacological productions technology, pharmacy, medicine, public health).

At the same time has the following disadvantages:

- – not fully utilized research potential of the university due to lack of use key performance indicators (KPI) (optimize requirements)

- – develop application specific projects commissioned representatives of business structures to increase the involvement faculty and students in the implementation of contractual research work;

- – not enough runs on interdisciplinary projects

- – remains insufficient motivation of faculty and staff participation in university research, scientific innovation; contests conducted for grants to national, regional and targeted programs.

- Lack of small innovative enterprises, allowing to carry out technology transfer of intellectual property within the industry (eg through development of pharmacists, by releasing farm.produktу respectively commercialized products and offer the local market)

- A number of researchers of the University has no publications of scientific articles in journals Web of Science / Scopus and recommended by the Committee for Control of Education and Science of the Republic of Kazakhstan, as well as have the citations in Web of Science / Scopus and Russian Science Citation Index (RISC);

- You want to increase the proportion of funds received from the university management of intellectual property in the total income of the university;

- a number of faculties and departments remains low proportion of the young scientists undergraduates, doctoral PhD (without scientific degree – up to 30 years, PhD – 35 years, Doctor of Science – 40 years) in the total number of academic staff;

- indicators of research students are in last place in the ranking of medical schools RK

- low level of participation of the university scientists in international research projects.

Another important measure of the vector of development of scientific work at the university, the percentage of scientific publications, student performance, undergraduates, doctoral students, interns and residents decreased to 10 % of the total number of publications made by university staff. These data indicate the highly unsatisfactory reproduction of the

teaching staff of the university for, as well as highly qualified personnel for practical public health of the region, they do not cover the needs of the university, and the current composition of the PPP is steadily aging. This evidence falling attractiveness and prestige of scientific activity, it seems unattainable students in many ways, in this regard, the indicator research students KazNMU is in last place among the medical schools of the country.

The existing system of increasing employee motivation University of key performance indicators (KPI) is ineffective in force, the fact that financial incentives are available only to a small circle of people and left behind most of the faculty. If the account of the interests of the collective faculty and supplements to wages each correlated depending on the contribution as a percentage for publications with a significant contribution or increase students' science, which undoubtedly would have led to positive trends.

Thus, in spite of the shortcomings identified by the majority of indicators characterizing the state of scientific work (training of the teaching staff, the effectiveness of master degree, doctoral training of scientific production, quoting, inventive activity, etc.), analysis of materials and reports showed that main indicators in the scientific work has not only retained KazNMU made over the previous years level, but its development trends have been steadily positive.

The most important results obtained in the field of scientific activities of the university in 2013 are:

- Increase funding for research and development by 15 % compared with the previous reporting period;

- Increase funding for research at the expense of self-supporting means, or by international grants.

- Increase the proportion of funds received from the university management of intellectual property in the total income of the institution (in particular through the laboratory of the Department of Ecology and general hygiene);

Today in KazNMU there are many hidden reserves will help to preserve and multiply all the accumulated benefits and competent management research would achieve the stated goals and objectives. According to the results of indicators for delivery in 2013 to the Republican Centre for Health Development of the Ministry of Health of the Republic of Kazakhstan KazNMU took a worthy second place in the medical schools of the Republic of Kazakhstan (only six medical schools)

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АННОТАЦИЯ

В статье обсуждается текущее состояние индикаторов научно-исследовательской деятельности Казахского национального медицинского университета им. С.Д.Асфендиярова за период с 2011 до 2015 г. Анализ ключевых показателей исследовательского университета определяет последующие результаты и перспективы дальнейшего развития университетской науки.

Ключевые слова: высшее образование, университет, медицина, индикаторы.

ТҮЙІН

Атындағы Қазақ ұлттық медицина университетінің ғылыми іс-зерттеу қызмет бабында ағымдағы жай-күйі индикаторларға талқылануда аралығындағы кезеңде С.Ж.Асфендияров 2011-2015 дейін. Негізгі көрсеткіштерін талдау нәтижелері және университеттік ғылым зерттеу университетінің кейінгі одан әрі даму перспективаларын айқындайды.

Түйінді сөздер: жоғары білімі, университет, медицина, индикаторлар.