



Pedagogical Conditions for the Professional Competence Formation of Medical Universities Students in the Course of Studying Bioethics Conceptual Fundamentals

L. K. Gazgireeva¹, E. V. Goverdovskaya², Y. P. Vetrov³, V. N. Goncharov⁴, A. M. Erokhin⁴, O. Y. Kolosova⁵

¹Pyatigorsk State University, Kalinina Av., 9, Pyatigorsk, 357532, Russia

²Volgograd State Medical University, Pavshikh Bortsov Sq., 1, Volgograd, 357532, Russia

³Armavir State Pedagogical University, Rosy Luxemburg St., 159, Armavir, 352901, Russia

⁴North Caucasus Federal University, 1, Pushkina St., Stavropol, 355009, Russia

⁵Krasnodar University of the Ministry of Internal Affairs of the Russian Federation (Stavropol Branch), Kulakova St., 43, Stavropol, 355043, Russia

Abstract

The article deals with the problem of pilot studies from the standpoint of studying bioethics conceptual fundamentals in the higher medical education system. The authors consider the opinions of pedagogues and Western philosophers and emphasize that experimenting on animals is crucial for biomedical sciences and significant for understanding life phenomena. It is noted that organizational-pedagogic conditions act as the main factor of the formation of the students' professional competence in the process of studying bioethics. The principles underlying the current federal legal acts are analyzed. The authors draw a conclusion that there are certain contradictions between bioethics principles and teaching medicine. Bioethics specificity as an emerging system of rules, principles and norms requires constant monitoring of the bioethics situation both in Russia and abroad. It leads to the necessity to correct course programs in Philosophy and Bioethics and to review the methods of teaching in accordance with the specified worldview and social basics.

Keywords: bioethics, higher medical education, pedagogical conditions, philosophy, pilot studies, professional competence.

INTRODUCTION

Taking into account the transition to persistent social development, it is essential to touch upon the issue of forming new economic and competitive thinking of a modern university student. Moreover, "in the present educational space, the necessity to form new worldview attitudes is becoming more and more evident" [1, 2].

The solution of the problem associated with forming the professional competence of a university graduate in the context of higher professional education modernization is possible only due to two basic aspects:

- *the pedagogical aspect* that reveals the character and the content of the subjects' interaction within the educational process;
- *the organizational aspect* that reveals the issues connected with organizing the educational process in a university, which is necessary for the formation of the professional competence of a university graduate.

In this regard, organizational-pedagogical conditions for the formation of the professional competence of a university graduate become a priority. In our opinion, *these conditions will be implemented in the process of studying bioethics conceptual fundamentals and in the awareness of biomedical experimenting on animals in particular.*

MAIN PART

It is worth noting that the competence approach is not completely new in the educational system of Russia. It was considered by P.Ya. Galperin, V.V. Kraevsky, I.Ya. Lerner, M.N. Skatkin, G.P. Shchedrovitsky and others. These scientists' works focus on students' skills acquisition and on the formation of generalized modes of action.

E.F. Zeer, D.A. Ivanov, A.A. Khutorskoy and others studied the essence of the competence approach towards education as well as with the correlation between the leading elements of the given approach. V.A. Belikov, A.K. Markova, A.Ya. Nayn, V.A. Slastenin, A.V. Shcherbakov considered the means to improve the professional competence.

Researches that have been carried out in Western philosophy over the past several decades reflect the issue of animals' intelligence. Legally, this issue is of scientific interest due to the fact that it is aimed at developing necessary understanding of the humane treatment of animals. It is worth

noting that a lot of data obtained in the similar researches do not completely contribute to solving the mentioned issues. Moreover, not only medical workers but also by scientists and teachers who are directly or indirectly related to the issue of biomedical experimenting on animals consider it at a serious scientific level.

It should be noted that experimenting on animals is essential for biomedical sciences and for understanding life phenomena. The given problem, in our opinion, is rather controversial. On the one hand, a human cannot do without experimenting on animals in solving existential problems, whereas, on the other hand, the ethical principles of a respectful attitude towards life impose duties of animal protection. In fact, experimenting on animals is a specific form of human existence, self-preservation and well-being [3]. The roots of this problem are to be sought in the history of Western philosophy.

According to professor L.K. Gazgireeva, the problem of biomedical experimenting on animals, its ethical and humane aspects occupy a special place in modern Western philosophy [4]. Taking into consideration the subject of the study it can be stated that this issue is cross-cutting. It includes the empirical bases of such sciences as ethology, zoopsychology, neuropsychology, genetics, history, medicine, pharmacology, veterinary medicine, surgery, jurisprudence, ethical conceptions, etc.

Let us consider some examples from the history of Western philosophy. In 1975 a book "Animal Liberation" was published by a renowned Australian ecophilosopher Peter Singer, one of the leaders of the world movement for animal liberation. This book, which was oriented towards the ordinary people, received a wide public response and generated interest in the issues raised by P. Singer among philosophers and scientists. The word "liberation" was interpreted in the same meaning as the liberation of slaves in the USA. P. Singer and his followers insisted on the similarity between "animal liberation", the abolition of slavery in the USA and the struggle for women's and homosexuals' rights [5]. P. Singer defined his major task as the exposure and gradual change of age-old "tyranny" of people against animals. It is illustrated with the description of painful experiments on animals, the treatment of productive animals on farms and slaughterhouses. His observations resulted in an appeal to mankind to adopt vegetarianism.

Presently *the following aspects of studying experimenting on animals can be singled out in Western philosophy.*

- Debates about the importance of the given kind of research for science and humanity in general. Disputes about the adequacy of knowledge gained through experimenting on animals, their applicability to the solution of human health problems (especially after the thalidomide scandal, and also in connection with the studies of the mechanisms of cancer and diabetes mellitus induction conducted with the use of laboratory mice, in which the first disease has its own specificity, and the second does not occur at all). Disputes about moral and financial, ethical and scientific justification of the above-mentioned "artificial" experiments, in which animals are studied for uncharacteristic diseases. The emerging opinion about the "false path" in the development of biomedical knowledge, historically originated from experimenting on animals instead of accumulating clinical observations [1, 6].
- The related issue of "phony" budgets for research programs of questionable benefit, the problems of conspiracies between research centers and suppliers of laboratory animals, food, etc., aimed at generating income from animal research funds and animal care products at exorbitant prices (the ethical and axiological aspects of modern science) [6].
- Scientifically proven ability of laboratory animals to feel pain (the ethical aspect that led to the shift of Western philosophy to the biocentric position).
- The related issue of defining the term "human's consciousness", existence of animal consciousness, their similarities and differences. The problems associated with determining the intelligence level of animals belonging to different taxonomy groups and, as a result, the issue of granting rights to animals and adopting a vegetarian diet by humans.

More and more sociologists, pedagogues, philosophers, medics, biologists and other scientists are joining the discussion. It is possible to single out three main points of view.

- 1) *The traditional pro-experimental point of view* that supports unconditional benefits of unlimited experimenting on animals without taking into consideration the problems of correspondence between animal and human diseases. In this case animal consciousness and the ability to feel pain do not matter. However, the necessity to improve animal housing conditions, care, pain relief and euthanasia are taken into account.
- 2) *The strict anti-experimental point of view* that, as a rule, seeks to completely forbid any experimenting on animals. However, in this case the criteria for excluding animals from experimenting are to be discussed.
- 3) *The moderate point of view* that seeks the so-called "aurea mediocritas" (the golden mean), which acknowledges the scientific necessity of experimenting on animals but with particular restrictions.

Nevertheless, the given view is essentially anti-experimental and raises the issues of transferring data that were obtained from animal models to the human diseases mechanisms. It also focuses on diseases prevention, instead of attempts to find a benign healing source, as in case of cancer or obesity caused by smoking.

Similarly, many supporters of the given point of view agree with the opponents of experimenting that cosmetics and household chemicals safety tests, conducted on animals, are not essential for experimenting.

It is worth noting that the results of such interdisciplinary discussions went beyond theoretical limits long

ago providing an opportunity for many experimenters and philosophers to refer to the data obtained for practical purposes.

In 1984 all federal bodies connected with biomedical research participated in compiling a *set of principles underlying the current federal normative acts*. They include the following requirements:

- experimenting on animal should not be meaningless in terms of obtaining new knowledge about human and animal health;
- to obtain reliable results the minimum number of animals should be involved;
- alternatives to experimenting on animal should be considered;
- it is necessary to avoid or minimize pain and discomfort inflicted to animals;
- animal housing conditions should correspond to animal species requirements;
- laboratory animal care staff should be properly trained and should have necessary qualifications.

The very essence of the principles mentioned above is reduced to the so-called 3 R's: *Reduction* (the minimum number of animals involved), *Refinement* (animal care, proper animal housing conditions, humane preparation and experiments), *Replacement* (the possible use of substitute models). These principles were introduced by W.M.S. Russell and R.L. Burch in 1959 in their book "The Principles of Humane Experimental Technique" [7].

At present the issue of using animal substitute models is being actively discussed. Many researchers believe that scientists are able to do without animals taking into account modern medical and biological technologies, mathematical models, cell culture and tissues [5]. Nevertheless, the other discussion participants are not so optimistic due to a number of reasons.

According to U.M. Kukhtina, knowing historical facts about experimenting on animals is necessary for its appropriate philosophical and ethical analysis. It enables to notice its evolution in the course of the development of human civilization [8].

The consideration of biomedical problems and past errors from both scientific and philosophical points of view enables to re-evaluate them, to find new solutions and to discover new problem areas. In addition, since ancient times all the history of experimenting on animals has been a valuable source of knowledge about the development of ethical and anthropological ideas. It reflects the changes in people's views on themselves and on other living things; it enables to understand the ideas about the surrounding world and about people's place in it.

However, the works that are somehow connected with the history of experimenting on animals are rather few, and the information they contain is very superficial and biased.

The latter circumstance, however, is applied not only to the history of experimenting on animals but also to the entire philosophical understanding of the role of biomedical experimenting for humanity in general.

According to A. Rowan, the primitiveness and the excessive bias of many sources that influence the public and its mindset are essential features of modern understanding of biomedical experimenting in the West [9]. Let us provide some facts. In 1822 François Magendie experimentally proved that anterior spinal nerve roots are efferent, whereas posterior anterior spinal nerve roots are afferent or sensitive (<https://dic.academic.ru/dic.nsf/bse/105623>) [10]. R. Ryder criticized F. Magendie calling him a sadist of little scientific value, whose experiments were not at all accurate [11]. C.R. Gallistel, in his turn, wrote that F. Magendie "made one of the greatest discoveries in the history of biology" [12].

Similarly, there is a range of views about Claude Bernard, F. Magendie's apprentice. R. Ryder insisted on Bernard's utter uselessness in healing the sick and comforting the dying and called his experiments medically worthless [11]. However, T.S. Sorokina noted Claude Bernard's great role for the advancement of medicine. He studied in details physiological mechanisms of secretion and the importance of digestive properties of saliva, gastric juice and the secretion of the pancreas for a healthy and sick organism, thus, laying the foundations for experimental pathology. He developed the theory of diabetes (the highest award of the French Academy of Sciences, 1853). He was engaged in the study of the nervous regulation of blood circulation and worked out the conception of the importance of organism's internal environment constancy (the basis of the homeostasis doctrine) [13].

It should be noted that the views of some authoritative researchers are based on the belief that experimenting on animals, which they regard as fruitless and even dangerous, was the result of the intrigues of such renowned personalities as Aristotle, Thomas Aquinas or Rene Descartes. These scientists completely reject any objectivity in the development of experimenting on animals. Thus, the positivist orientation in the study of history and philosophy of science is extremely widespread among modern Western scientists, but its prerequisites and the objective reasons for its emergence are not focused at all.

The given approach affects not only the study of history of biology and the formation of related philosophical ideas but also the views, which are propagated by animal rights defenders and humane animal treatment promoters.

To a certain extent, such a state of affairs is caused by the fact that, as a rule, contemporary researchers of experimenting on animals are not ideologically independent. For the most part, they are implicitly or explicitly related to animal rights defenders. They often apply the values of the above-mentioned groups in their researches, which affect the objectivity assessment of particular facts and events.

The very opportunity of carrying out research is often dependent on biased funding sources. It is evident that implementing such a "social order" leads to the lack of objectivity; thus, the research value is reduced as well as scientists' authority.

The difficulties associated with information search are a major cause of the lack of fundamental works on history of experimenting on animals. Such work requires a wide range of multiannual interdisciplinary research and processing of large volumes of archeological data, literature sources of various epochs in different languages, etc. It implies scientist's profound professional training in diverse science areas. It is also worth mentioning that a researcher of this subject matter needs to be financed properly in order to undertake research on a long-term basis. It is not an easy objective to achieve, thus, the number of scientists willing to work in this field is rather low.

Considering the problem of the essence of experimental research from the standpoint of bioethics conceptual fundamentals in the higher medical education system, it is necessary to draw attention to the fact that there are certain contradictions between bioethics principles and teaching medicine. These contradictions were accumulated throughout three periods in the development of experimenting on animals. The first period (until XIX century) included episodic research on wild and domestic species without pain medication. The second period (XIX century – mid-XX century) included systematic experimenting on animals that was established as a scientific research method. The third period (mid-XX century – until present) marks the emergence of laboratory animal science as a new branch of biology, the development of the three R's conception, the formation of international and national regulation

in the sphere of experimenting on animals as well as the establishment of the social-political movement to end or severely restrict experimenting on animals. In many foreign universities experiments on living animals are not demonstrated to students due to bioethical reasons. This fact probably restricts students' opportunity to obtain reliable data about living organisms' functions [14].

Recommendations to substitute experimenting on animals for mathematical models are rather questionable in this regard. A great scientist and pedagogue I.P. Pavlov believed that animals provide excellent material not only for scientific but also for training purposes. He attached particular importance to the surgical methods of research on animals that recovered from previous medical operations. Experimenting on such animals is visual and instructive; it enables to avoid spilling blood of new animals [15].

As we believe, *video recorded animal test demonstrations* are one of the most realistic contemporary approaches towards the given problem.

CONCLUSIONS

Speaking of the academic course in "Philosophy and Bioethics" we stress that it is included into the State Standard of biologists training of all qualifications. Bioethics is understood as an interdisciplinary knowledge area aimed at identifying and studying biomedical practice problems and at carrying out biological research associated with broad philosophical, moral and socio-legal reflection. The specifics of this course include the consideration of bioethical problems in the context of students' scientific activities, which include research and experimental work.

Bioethics specificity as an emerging system of rules, principles and norms require constant monitoring of the bioethical situation both in Russia and abroad. Thus, it is necessary to correct course programs in Philosophy and Bioethics and to review the methods of teaching in accordance with the specified worldview and social basics [16]. It contributes to the formation of the professional competence of a medical university graduate.

We believe that in the modern educational system, on the one hand, the project of a future social system should be reflected, whereas, on the other hand, education for a particular person is temporally irreversible and professional training is carried out in a particular country at present. Education enables to prepare people for uncertain and mainly unrestricted and unpredictable future.

In the higher medical education system new approaches towards justifying and implementing experimentation methods are being formed. According to professor E.V. Goverdovskaya, "Higher education is a leading mechanism of reproducing social intelligence" [17]. That is why it is necessary to adopt provisions that enable to avoid contradictions within the given academic course. It is essential to appeal to those personal and professional competences that will be demanded in professional society. These competences will allow making independent decisions that are necessary for professional education and self-reflection in the course of life. To organize such experiments in higher education institutions, *the moderate point of view* should be taken into consideration. It seeks "aurea mediocritas" (the golden mean) and acknowledges the scientific necessity of experimenting on animals but with particular restrictions. For instance, there must be a clear plan, goals and convincing arguments of an experiment that will provide new knowledge. Nevertheless, there is no common opinion on what criteria should indicate the experiments' value and future perspectives.

Consequently, it is legitimate to consider that the compliance with these criteria must be ensured by bioethical commissions of universities and research facilities. These

organizations contribute to forming students' knowledge basis, establishing the interrelation between academic disciplines and professional practical activities; they enable to involve students into practical activity in accordance with the chosen qualifications. Moreover, the following principles must become the major requirements for treating animals: *the improvement principle* (basing on three R's), *"the principle of five freedoms"*, *"the reduction principle"*, and *"the replacement principle"*.

Thus, there are two aspects in the course of studying bioethics conceptual fundamentals. *The pedagogical aspect consists in the formation of students' humane qualities in treating animals. The organizational aspect includes the interactive (innovative) methods and the organization of students' training in the professional-educational space as the key factors of the professional competence formation of a medical university graduate.*

REFERENCES

- [1] Dokhoyan, A. M., Reutova, L. P., Artsimovich, I. V., Belous, O. V., Sokolova, O. V., Goverdovskaya, E. V., A diagnostic toolkit in the work with children and adolescents showing signs of sociopathic personality disorder, *Journal of Pharmaceutical Sciences and Research* 2018, 10(3), 685-688.
- [2] Bolkhovskoy, A. L., Goverdovskaya, E. V., Kolosova, O. Y., Goncharov, V. N., Vetrov, Y. P., The aspects of biological and medical knowledge and their role in teaching philosophy in a medical pharmaceutical institute, *Journal of Pharmaceutical Sciences and Research* 2018, 10(4), 701-704.
- [3] Burnyasheva, L. A., Gazgireeva, L. K., *Conceptualization of spiritual moral problems in modern Russian society: existential-value aspect: monograph*, KNORUS, Moscow 2016.
- [4] Gazgireeva, L. K., *Spiritual life of modern Russian society in the existential-value dimension: Abstract of Philosophy Doct. Diss.*, North Caucasus Federal University, Stavropol 2014.
- [5] Singer, P., *Animal liberation: A discuss book*, Avon Books, New York 1977.
- [6] Greek, C. R., Greek, J. S., *Sacred cows and golden geese: The human cost of experiments on animals*, New York 2000.
- [7] Russell, W. M. S., Burch, R. L., *The principles of humane experimental technique*, St. Martin's Press, New York 2002.
- [8] Kukhtina, U. M., Problems of biomedical experimenting on animals in modern Western philosophy, *Moscow University Bulletin: Philosophy* 2012, 3, 39-50.
- [9] Rowan, A., *Debating the value of animal research*, New York 1997.
- [10] Magendie, F., in: *The Great Soviet Encyclopedia*, Soviet Encyclopedia, Moscow.
- [11] Ryder, R., *Victims of science: The use of animals in research*, London 1975.
- [12] Gallistel, C. R., The case for unrestricted research using animals, in: *Animal Rights and Human Obligations*, New Jersey 1989.
- [13] Sorokina, T. S., *History of medicine*, Moscow 2008.
- [14] Kurzanov, A. N., Zabolotskikh, N. V., Experimenting on animals within the educational process in view of bioethics, *International Journal of Experimental Education* 2013, 4, 155-158.
- [15] Kopaladze, R. A., *Work with laboratory animals in the bioethics context: History, modernity, perspectives*, The success of physiology sciences, 2004.
- [16] Safronova, E. V., Loba, V. E., Dangerous condition of person as a criminal term, *Criminology Journal of Baikal National University of Economics and Law* 2014, 3, 10-17.
- [17] Goverdovskaya, E. V., Specifics of projecting higher educational space in a polycultural region, *Economic and Humanitarian Regional Research* 2014, 4, 7-10.