

Relevance of animal experimentation in physiology

Physiology as a subject of medical research and education has vast scope for animal experimentation. Physiology has contributed a lot to advancement of medical science through discoveries performed primarily by means of animal experiments and research. In nineteenth century, rapid progress in medicine was possible through studies conducted in experimental physiology. Therefore, the Nobel Prize in medicine was designated as "Nobel Prize in Physiology and Medicine." The great physiologist and visionary, and the father of experimental physiology Prof. Claude Bernard had established the principles of experimental medicine.^[1] He was often cited by bench scientists who wish to provide a scientific justification of animal experimentation. In 1988, the American Medical Association (AMA) issued a white paper defending biomedical experimentation on animals. In defending the animal research, the AMA stated "In fact, virtually every advance in medical science in the 20th century, from antibiotics and vaccines to antidepressant drugs and organ transplants, has been achieved either directly or indirectly through the use of animals in laboratory experiments."^[2]

In January, 2012, a circular was issued from Ministry of Environment and Forests, endorsed by Ministry of Health and Family Welfare, Government of India for restriction of animal experiments in medical teaching and training stating that "Animal use should be avoided by using effective alternatives available today in the teaching of pharmacy/life sciences, as the use of animals in the existing circumstance is a contravention of the Prevention of Cruelty to Animals Act (PCA), 1960, which states that: "Experiments on animals are avoided wherever it is possible to do so, as for example in medical schools, hospital, colleges and the like, if other teaching devices such as books, models, films and the like may equally suffice." Though the circular does not ban use of animals for postgraduate (PG) education in medical institutes, animal activists used this as an instrument to oppose animal experiments for study purposes in medical schools and universities. Furthermore, there was a news

report on ban of animal dissection for PG education, published on 25th April, 2014, by "The Pioneer," English daily, mentioning that this is likely to be recommended by Medical Council of India (MCI). The news was based on the information provided by People for Ethical Treatment of Animals (PETA).^[3] These news have created disappointment among physiologists across the country, as animal experiments have been the major part of PG medical curriculum for decades.

Medical discoveries contributing to understanding of disease processes and management have been primarily attributed by experimental physiology through studies in animal models. For example, basic understanding of and further advancement in hypertension and diabetes have been possible due to unraveling the processes and of these mechanisms in diseases created in animal models such as the experimental hypertension model and diabetic model, respectively. For any drug to be tested in the clinical trials, the first phase is testing the drug in animal models to establish the fundamental properties and health impacts of the medicine. Thus, prior to clinical trials, testing of the basic nature of the drug by animal research is a must. No medicine has been discovered without its first phase study in animals.

Presently, animal experiments in physiology undergraduate (UG) medical education and training has been abolished. UG students see some of the charts and graphs of animal experiments to have some knowledge of such experiments in physiology. This was done to minimize the killing of animals for the learning of millions of UG medical and paramedical students across the country, and as such strictly it is not essential for UG students to perform animal experiments to understand the pathophysiology and management of a disease. The primary aim of UG medical education is to produce basic doctors to serve the patients in the community through peripheral health care delivery system, for whom existing knowledge in the textbook is enough for understanding the disease process and management. However, the objectives of PG medical education in physiology are different. Physiology being a core research subject in medicine, a PG student needs to understand and develop interest in animal experiments.

There are many aspects of medical research that can not be simply performed in human beings in the primary phase. These research methods can not be performed or mimicked by simulation studies or computer based

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|  | DOI: 10.4103/2348-8093.143471 |

models. As animal experiment is fundamental to medical research, especially in physiology, a PG student must develop aptitude for such research methods during his or her PG training. Without knowledge and experience in animal experiments, post-PG research in animal or experimental physiology can not be adopted. Therefore, for a researcher, interest for experimental physiology must develop during the PG learning. Hence, presently PG curriculum in physiology has adequate provision for animal experiments. But, due to lack of scope and resources for animal experiments, many medical colleges have reduced the requirement for animal experiments for PG courses. The present propaganda by PETA and other animal right activist groups has aided fuel to such fire to extinguish animal experiments in medical schools in the country. While we are against unethical use of animals and senseless killing of animals for medical education and research, we strongly advocate continuation of animal experiments in PG training, especially in physiology. Otherwise, the quality of PG training and consequence upon that the standard of research in physiology is bound to decline in the absence of animal experimentation in physiology.

We hope PETA and such groups understand the basic difference between UG and PG training in medicine, and do not oppose the rational use of animal in PG education programme in physiology. Most important, the faculty in physiology should understand the essential contribution of animal experiments in physiology PG training, and should vehemently pursue for its continuation.

We on behalf of International Journal of Clinical and Experimental Physiology have given representation to MCI with a request to allow the continuation of animal experimentation in physiology for PG training. We hope MCI does not yield to the demands of animal right activists and jeopardize the quality of PG training and research in physiology.

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How to cite this article: Pal GK. Relevance of animal experimentation in physiology. *Int J Clin Exp Physiol* 2014;1:171-2.

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