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Indian Journal of Physiology and Pharmacology

Opinion Article

Animal experiments in physiology: The present status and future directions

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Received : 20 May 2020
Accepted : 14 September 2020
Published : 25 January 2021

DOI
10.25259/IJPP_275_2020

Quick Response Code:

The present status and future directions of animal experiments in physiology cannot be considered in isolation from the question of physiology teaching in all the educational streams. Starting with the silver lining, a lot of physiology has found a place in the science (or more clearly biology) curricula in schools not only in India but also all over the world. Physiology as a subject is taught to paramedical, veterinary and biology stream students. In all these places, animal experiments, as a part of 'hands on' practical aid to teaching, have come down drastically. Animal experiments in the medical curriculum came down drastically before it got caught up with other disciplines.

Now, the use of animals for teaching in schools and for undergraduate training has practically stopped. However, it has to be realised that animal experiments in physiology are required not only for demonstrating already known facts and imparting surgical skills to students but also for exploring frontiers in biological science. In other words, it is required for scientific understanding and for advancement in health care. It is not necessary to use the limited space here to justify animal research, as it is a fact that actually needs no debate.

ANIMAL EXPERIMENTS IN MEDICAL UNDERGRADUATE CURRICULUM

There was a paper published in 2001 in an Indian journal by a couple of pharmacology teachers, based on the responses to a questionnaire that they got from students and teachers in pharmacology.[1] The results were on predictable lines. Most of them stated that animal experiments are useless exercises. Even if they have got the responses from physiology students and teachers, the results would not have been different. We cannot find fault with the students and teachers as there are genuine reasons for not feeling enthusiastic about practical exercises on animals. Of the 4 or 6 h of animal experiment, what they learn is some well-defined principle in physiology which is clearly written in a few lines in a textbook of physiology.

In the first phase, many animal experiments were converted to demonstration experiments. If it is surgical skill that the student might gain in animal experiments, it will not be there in demonstration experiments. Anyway, how is it going to help him or her when they become doctors? So, from the student point of view, it is a wasteful exercise. The teacher is also very happy if he is not forced to perform an experiment either to show the student how to do it or do it all by himself as a demonstration experiment. In every experiment, especially if it is an animal experiment, there is always a chance for failure. If the experiment does not bring out the expected results, the teacher cuts a sorry figure in front of the students.

Again, we cannot blame the students or the teachers for not feeling enthusiastic about practical exercises on animals, as the space given to the subject of physiology in medical curriculum is itself getting shrunken. It is not only physiology, but all the basic medical subjects which are given less importance in medical curriculum. We cannot blame those who make the curriculum as they have to cater to the needs of country. Newer and newer disciplines which have an important bearing on patient care are emerging in medical science. These subjects have to be taught to the students. One cannot increase the duration of training/ teaching to the students. On the other hand, there is always a clamour for reducing the training period. If we start thinking from the side of the government or the students, there are sufficient grounds to justify their outlook.

FUTURE DIRECTIONS

There was a time when physiology, anatomy and biochemistry were taught during the initial 2 years of medical curriculum. Then, it was brought down to 1½ years and now it is all completed in 1 year. If you do not 'waste' your time in practical classes (which takes up nearly half of the teaching time), it is possible to finish all the lectures in all the basic science departments in 6 months. A lot of money is required for establishing and running teaching laboratories, especially if animal experiments form part of the curriculum.

This ultimately lands us up in a vicious cycle. Students of today are going to be the physiology teachers tomorrow. If they have never attended practical classes, they can never conduct practical classes for students. There is also a thinking that physiologists may not be required to do the physiology teaching. The physician himself may take up the onus of teaching relevant physiology. This is already be happening with the discipline of anatomy. Students are not required to do dissection on cadavers. It is extremely difficult to get cadavers for students to do dissection or even for demonstration by the teachers. In many places, surgical anatomy is taught by surgeons and radiographic anatomy by radiologists.

This is an ideal situation for those who run the medical colleges, primarily from the private sector. They need to appoint physicians and surgeons in their medical institutions. They will not only look after the patients but they will also teach basic sciences to the medical and paramedical students.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCE

1. Roy V, Tekur U. Animal experiments in medical undergraduate curriculum: A teacher student perspective. Indian J Pharmacol 2001;33:104-7.

How to cite this article: Kumar VM. Animal experiments in physiology: The present status and future directions. Indian J Physiol Pharmacol 2020;64(Suppl_1):S26-S7.