

Attitude and Knowledge of Undergraduate Medical Students towards the Use of Animals in Medical Research: An Exploratory Study

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ABSTRACT

Introduction: Medical undergraduate courses and medical students have less emphasis on animal research and the various ethical issues surrounding animal research. Animal research plays a vital role in basic medical research and yet undergraduate students know very little about the same.

Aim: To assess the attitude and knowledge of medical undergraduate students towards animal research in general.

Materials and Methods: A total of 152 undergraduate medical students in the final year of their medical studies from two medical colleges (one from Mumbai and one from Kolhapur) were administered a semi-structured questionnaire on attitude and knowledge towards animal research. The questionnaire was validated by three senior researchers and was specially

designed for the study. The data were collected and analysed using frequency and percentages.

Results: Only 66(43.42%) students had visited an animal house/animal laboratory in their medical training and 114 (75%) of them had actual experience of handling animals mainly in the form of dissection studies on rats, frogs and guinea pigs. Only 21(13.8%) were aware of ethical guidelines regarding animal research and 23 (15.1%) strongly agreed that ethical aspects of animal research needed stringent regulation in India.

Conclusion: Animal research awareness is scarce in undergraduate medical students and there is a need to incorporate animal research awareness from a medical science point of view in their curriculum to help them develop an understanding of animal research and its ethical dimensions.

Keywords: Animal research, Ethics, Medical undergraduates, Medicine

INTRODUCTION

Animal research primarily refers to the use of animals in experimentation, medical studies and drug trials primarily for human benefit [1]. Animal experimentation has its critics and proponents and with mixed views prevailing on whether animal research must continue in medical research after all [2]. The contributions of animal research in medical science range from understanding of basic human physiology to medical microbiology, virology and drug discovery [3]. Animal research has facilitated the study of neurobiology of various psychiatric disorders and receptors of various drugs used in human subjects [4].

Ethical stalwarts argue that animal research is unethical as animals are abused and subjected to pain and torture during various experiments and thus, are reduced to mere lifeless tools to further human knowledge and advancements [5]. Animal activists believe that animals should have an equal right to live a life free of pain and suffering as human beings and thus, promulgate the thought that animal research practices should be abolished [6]. While, there is much literature on how various factors influence the public attitudes of medical students towards animal research in the west, there is a dearth of such research in India [7]. These studies found that female students had both more concern for animal suffering during life, and a greater concern for the reverence of animal life than males, but there were no gender differences in sentience attributed to the different animal species. Teacher awareness of these cultural and gender differences should engender tolerance towards different students' attitudes to the use of animals in education. There is a dearth of literature from India on this subject, hence, the current study was undertaken to gauge the attitude and perceptions of undergraduate medical students in India towards animal research.

MATERIALS AND METHODS

The study is an open survey done using written forms and Google survey forms. The study was done between June and August 2017

in Mumbai and was approved by the Department Review Board of the Psychiatry department of both institutes where it was done. Informed consent forms were signed by all participating in the study and the participation was voluntary. The subjects of our study were under-graduate medical students studying in two medical colleges (one in Mumbai and one in Kolhapur). These colleges were selected as they have been collaborating on multicentre research in the past as well and both departments felt that the area was worth exploring. Exclusion criteria were students that refused to participate in the study as participation was voluntary.

They were administered a questionnaire which was circulated by the authors via e-mails, social media or in person. The questionnaire included 12 questions (6 on knowledge and 6 on attitudes) asking about what they felt regarding animals being used in research and their suggestions were asked about the alternatives available or which animals can be used for research. The questionnaire was drafted based on previous similar studies but keeping the Indian scenario in mind [8,9]. The questionnaire used in the study was validated by three senior researchers (professor and above with more than 100 publications) prior to being administered to the students. The questionnaire was approved after all questions were approved by all researchers. The questionnaire was face validated by three other senior teachers in the department.

The medical students were studying in the MBBS course from two medical colleges were chosen for the study. All students were in the final year of their medical undergraduate studies. The data obtained were analysed using descriptive statistics and percentages and was entered into a Microsoft Excel sheet.

RESULTS

A total of 166 students were interviewed and 14 forms were rejected due to incomplete answers and improper data entered. Our study population included a total of 152 students in age group of 21-23 years doing their final year of MBBS of which we had 84 (55.26%)

males and 68 (44.74%) females. Only 66 students (43.42%) had ever visited animal house/animal laboratory in the past and 114 (75%) of them had actual experience of handling animals mainly in form of dissection studies on rats, guinea pigs, frogs and cockroaches. None of them had any experience with animal research. A total of 37 (24.4%) participants felt that animal research had little bearing on medicine while 46 (30.2%) were concerned about the pain and suffering that animals undergo during research. 23 (15.1%) strongly agreed that ethical aspects of animal research needed stringent regulation in India.

A total of 77 students (50.7%) were in favour that new drugs and surgical procedures should be tested in animals before being used for humans and almost thought there were other alternatives available for conducting research in this regards. Various options suggested were animal clones, tissue culture, 3D printing and artificial cells and tissue, plants tissues, consenting humans and terminally ill humans. A total of 42 (27.6%) believed that major medical breakthroughs had happened due to animal research. When asked about which animals should be allowed for use in research rats, mouse, monkeys, insects were suggested for using by our study population. The findings of the survey are described in detail in [Table/Fig-1].

| Question / Statement | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|--|----------------|------------|------------|------------|-------------------|
| Medical research on animals has little bearing on the problems confronting people | 5 (3.3%) | 32 (21.1%) | 58 (38.2%) | 43 (28.3%) | 14 (9.2%) |
| I am very concerned about the pain and suffering animals undergo during animal research | 16 (10.5%) | 30 (19.7%) | 28 (18.4%) | 43 (28.3%) | 35 (23.0%) |
| I would rather see human patients die of disease than see animals slaughtered to save humans via research | 21 (13.8%) | 35 (23.0%) | 46 (30.3%) | 27 (17.8%) | 23 (15.1%) |
| Animal research may give us scientific data but very little of this is applicable to human beings | 7 (4.6%) | 46 (30.3%) | 39 (25.7%) | 55 (36.2%) | 5 (3.3%) |
| New surgical procedures and experimental drugs must be tested on animals prior to studying them in humans | 8 (5.3%) | 31 (20.4%) | 36 (23.7%) | 55 (36.2%) | 22 (14.5%) |
| There are plenty of viable alternatives to the use of animals in biomedical and behavioural brain research | 8 (5.3%) | 31 (20.4%) | 48 (31.6%) | 50 (32.9%) | 15 (9.9%) |
| Most important medical breakthroughs come about from experimentation with animals | 6 (3.9%) | 36 (23.7%) | 45 (29.6%) | 40 (26.3%) | 25 (16.4%) |
| Most psychological and psychiatric research done in animals is invalid and not needed | 13 (8.6%) | 42 (27.6%) | 44 (28.9%) | 41 (27.0%) | 12 (7.9%) |
| Ethical aspects of animal research needs stringent regulation in India | 23 (15.1%) | 24 (15.8%) | 46 (30.3%) | 40 (26.3%) | 19 (12.5%) |
| Animals in research must be treated at the same levels for their rights as humans | 22 (14.5%) | 31 (20.4%) | 24 (15.8%) | 53 (34.9%) | 22 (14.5%) |
| Animal research in medicine is not justified and must be totally stopped/abolished | 19 (12.5%) | 31 (20.4%) | 42 (27.6%) | 41 (27.0%) | 19 (12.5%) |
| Do you think experimental genetic research like cloning and DNA research should be allowed in animals | 9 (5.9%) | 47 (30.9%) | 28 (18.4%) | 45 (29.6%) | 23 (15.1%) |

[Table/Fig-1]: Answers to questionnaire given by the medical undergraduate students.

DISCUSSION

In our study it was found that not many students were in favour of animal research. Various alternatives were suggested by them and also need for stringent rules for animal research was vocalised.

In a study, 3,433 student responses from 103 universities were recorded. Respondents rated the acceptability of 43 major concerns about animals (focused on type of use, animal integrity, killing animals, animal welfare, experimentation on animals, changes in animal genotypes, the environment for animals and societal attitudes towards animals) [10]. Students from European countries had more concern for animal welfare than students from Asian countries, which may be partly explained by increased affluence of European students as there was a positive correlation between student expenditure and concern for animal welfare and rights. Southern and central European countries had most concern for animal rights and unnatural practices. Thus, there were national and continental differences in European and Asian students' attitudes to animals' welfare and rights, which appear to arise as a result of the socio-political situation in regions rather than religious or other differences [10]. Our study also revealed similar viewpoints among the students. There are not many studies where a direct comparison with our study may be made.

Medical undergraduate students usually have very little exposure to bioethics and animal or human biomedical research during their study years. Hence, we expected a lukewarm positive response to the answers after administering the questionnaire. Ethical guidelines for human and animal research are rarely discussed in the undergraduate medical curriculum [11]. Majority of the students voted for stringent ethical regulations with regard to animal research in India. This was heartening as they had the same respect for humans and animals in an ethical and research perspective. Earlier physiology practical studies in medical colleges used to have animal experiments involving frogs, rats and dogs but off late, these have been scrapped due to stringent animal research guidelines [12].

Usually medical animal research is rarely a regular practice in India and it is only now that various animal activist organizations have been laying down the rules and regulations for animal research and profess ethical treatment of animals [13]. Some students answered in favour of abolishing animal research. This would be a disaster for basic research in neuroscience, medical research, drug research and psychiatry as animal research serves as building blocks for drug and neuroscience research in humans [14].

LIMITATION

The study was circumscribed to just 152 medical students of two medical colleges and this served as a limitation of the study. Larger studies in diverse medical student populations across various cities are needed to draw a greater Indian perspective. Nevertheless, awareness about animal research needs to be created in medical undergraduate students to achieve the awareness that is desired.

CONCLUSION

Overall we perceived that undergraduate medical students had sparse knowledge of animal based research and the ethical issues concerned with the same. There is a need for inclusion of research ethics and bioethics as a topic with both human and animal research in undergraduate medical courses so that awareness about the same may be increased.

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