

Medical students and professionals attitudes towards, awareness of, and interest in Animal research

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Abstract

Introduction

Animal experimentation in drug trials, basic medical learning, the efficacy of drugs, their mechanism of action, behavioural and numerous neurobiological studies are ongoing before future usage in human trials. This current paper aims to investigate the attitudes, awareness and interest of animal research study among students and practitioners.

Materials & methods

A self-structured survey questionnaires designed on animal research interest, perceptions, research update, ethical aspects, need for study, and justifications on clinical trials. This cross sectional survey study was conducted among medical practitioners and students in a short period of May 2021. The data were analysed by descriptive statistics using IBM SPSSv23.

Results

The status, experience, updates, attitude, interest of medical apprentices on animal trial research responses were (82% interested), 3R's awareness in research, (34% Replace, Recur, Research), 42% accepted scientific research is carried out in animals as there are no other alternatives, also to find an alternative to animal use in research and the standards are not high enough in conducting the animal trials. 48% strongly agreed that ethical regulation is needed in animal research. 82% perceptions for developing new procedures and treatments, medical diagnosis, and advancements in animal research trials. 50% strongly agree that animal trials are enough to perform for processing human trials.

Conclusion

The study concluded that the majority of the medical students and clinicians interested in animal research trials, only a few participate in research during the medical training period.

Keywords: Animal research, clinical trials, medical apprentices, perception.

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Introduction

Clinical research primarily by experimentation in animals in drug trials and medical study for human benefits referred to as animal research.

(1) Animal experiments have critics and mixed views on their own in medical research after all. Animal research contributors range from basic science understanding about physiology of humans, virology, drug discovery, and microbiology. Research facilitated on animals includes the neurobiological study on various psychological disorders and behaviours by activating the animal receptors with numerous drugs for its future usage in human subjects (2).

A concern is ongoing among the scientists and medical community towards the use and interest in animal research. (3)

The development of students capacity for animal research is essential in both institutional and individual level basis for improving and

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attaining a sustainable level in medical research. The voids have to be filled for improving and attaining a sustainable level in medical research. The voids have to be filled by encouraging the students to expand their knowledge and allurements on animal research (4). The decline of preferences in opting for animal research has been documented among a number of physicians lacking their medical practice, less stipend incentive, inadequate research exposure and family reasons (5). Previous exploratory study research on the use of animals in research among medical students was done which did not fulfill the interest and vital role of physician's exposure towards research studies (6). Arguments on animal research among stalwarts hinge on animal abuse during experiments like subjecting it to pain is unethical as a tool for human advancements and knowledge (7). It is pivotal to formulate the interest and attitudes on animal research among students during their training period as a curriculum among undergraduates to increase participation in animal research (8).

This study analyses the means, interests, updates, ethical aspects and perceptions of animal research. There is a dearth of documentation of literature in India on this subject henceforth the present study aims to index the study on attitude, awareness and interest of animal research among medical students.

Materials and methods

The study is a cross-sectional study done by circulating the survey questionnaire in google forms. This is a short-term study and was carried out in May 2021. The approval of the study was done by the Scientific review board of Saveetha dental college, Chennai. This was an open survey study and the exclusion criteria of the study include the students who refuse to participate in the study as there was voluntary participation in the study.

A questionnaire was circulated with six questions which included questions based on attitude, interest, perception, ethics, and knowledge about animal study. The approval of the questionnaire was given by the review board with senior researchers and guides (with

more than 200 publications) The questions were circulated in google form links and also through emails. The responses were collected in the google datasheet and analyzed by descriptive statistical analysis and percentages are calculated.

Results and Discussion

The study was conducted among 50 participants where incomplete forms are rejected. The study involved 66.0% males and 33.0% females with 64% students and 36% medical practitioners (Figure1)(Figure 2). Among them 82% are well interested in animal research and have visited the animal houses frequently, 14% are fairly interested and have not visited the animal houses, 4% are not interested in animal research (Figure 3). The second question was based on three Rs awareness on animal research which is to reduce the number of animals in research use, Replace animals with computational model methods, Refine is to improve the research in animals through noninvasive methods. (Figure 4) reveals only 38% gave the response as Replace, Reduce and Research, 34% responded as Replace, Recur and Research, 20% Refine, Replace and Research. Few justifications for carrying out animal research procedure (Figure 5) 42% are acceptable with all of the above reasons which include the scientific research carried out in animals. Since there are no other alternatives for clinical trials research other than animals as the first experimental model, the second reason includes finding an alternative to animal experimentation, the final reason is that the trials on animals are not of higher standards in our country. 22% accepted only the first reason that there are no other alternatives to carry out the research other than animals. 32% responded that the research on animals is not of high standards. (Figure 6) when questioned about the ethical aspects based on stringent regulation on animal research reveals that 50% of respondents agree that regulation is needed and 48% strongly agree with the need for ethical stringent regulation of animal research in India. (Figure7) is about the perception of animal research. The majority of 82% responded that animal experiments are needed for developing new procedures for the treatment of diseases, for medical diagnosis and also for advancing the understanding and biological research in the

human body. 10% complete their perceptions regarding animal research is only for developing new procedures and treatments, 6% retaliate against animal research for advancing the understanding and biological research on the human body. (Figure8) came out with 50% justified that clinical trials on animals in research is enough to conduct human trials, 38% disagree and the rest 12% agreed with their outlook regarding the lab trials in animal scrutiny.

The present survey study is to reveal the opinions and interest of animal research exposure among physicians and students and their update of the same. Respondents were interrogated with six questions based on animal scrutiny in scientific research. The questionnaire priority was given regarding the interest of the students and practitioners in research following their updates, justification, and perceptions regarding the research outcomes and further proceeding in human trials. Previous literature on attitudes of general physicians towards animal intervention had described knowledge, experience, opinion, and attitude of Italian practitioners towards Animal

Assisted Intervention(AII) with the overall response supporting the animal-human relationship in therapeutic research purpose. Also, the respondents attributed the ability of animals to act as social lubricants and mediators with a positive attitude toward animal interventions. (9) The clinical setting, mechanism of action, safety, and efficacy of treatments are analyzed prior its usage among patients stated that positive attitude of medical students regarding animal research is more though, the negative response appears not to be held rigidly and future study on the curriculum of research development has to be considered in medical-grade school. (10) Negative attitudes of students on research are an obstacle for learning and lack of performance. Most physicians are unaware of how crucial and important research is in healthcare. (11) Various other studies were animals are considered to be the foremost experimental model includes research on stem cells, a cell based therapeutic study which reveals that stem cell from the teeth, pulp and marrow have the ability to form bone along with platelet rich

plasma (12). To perform a prospective study to analyse the changes in red blood cells quantitatively in cancer patients under radiotherapy as done retrospectively (13). The genetic mutations in developmental diseases its psychological outcome and behaviours (14) (15). Chromosomal patterning and its photographic imaging is called karyotyping. It determines the chromosomal abnormalities and helps to discover new medicines. Various haematological studies related to conditions like thrombosis, haemophilia, angina, coagulation and liver disorders (16). To understand the role of collagen which acts as a scaffold in the healing process of wounds (17). Animal study utilised and needed extensively in biomedical based research especially to study the salivary constituents including mRNA, miRNA, prion proteins, microbes, matrix metalloproteinases in saliva inducing cancers, hypertension and diabetes mellitus (18) (19). The study has to be conducted with more sets of positive and negative bias questions regarding the animal scrutiny. The study has to be conducted for a long duration period among various universities and huge populations of students. Surveys should also include videos regarding animal education and framing of questionnaires without laying any response bias. Future scopes should include an appropriate animal research curriculum in medical schools, conferences have to be conducted, many types of research in the field

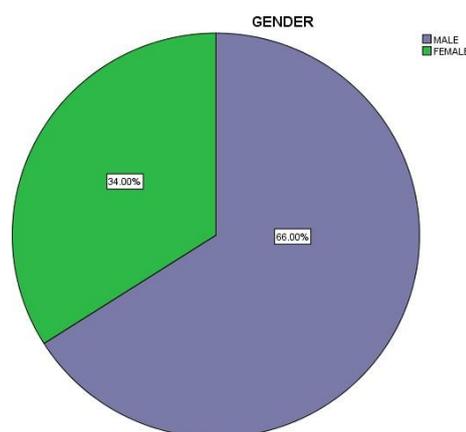


Figure 1: The percentage of Gender responded to the study with 66% male(ash), 34% female (green)

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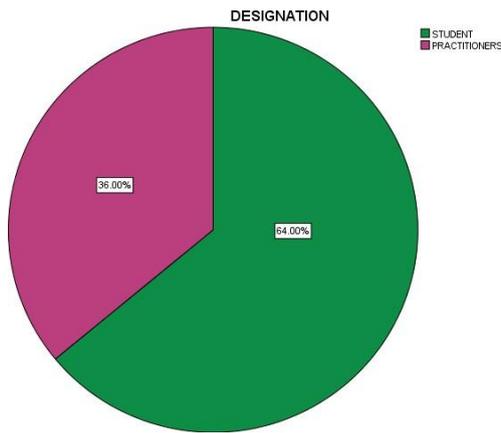


Figure 2: The above pie chart depicts 64% of students (green) and 36% of practitioners who participated in the cross-sectional study

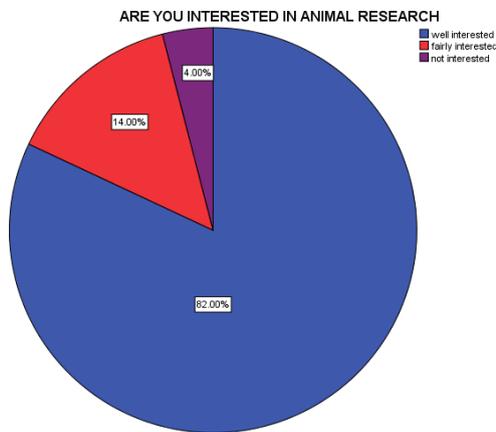


Figure 3: The above chart portrays 82% of responses are well interested in an animal research study (Blue), 14% are fairly interested in a research study (red), 4% (violet) are not interested in participation.

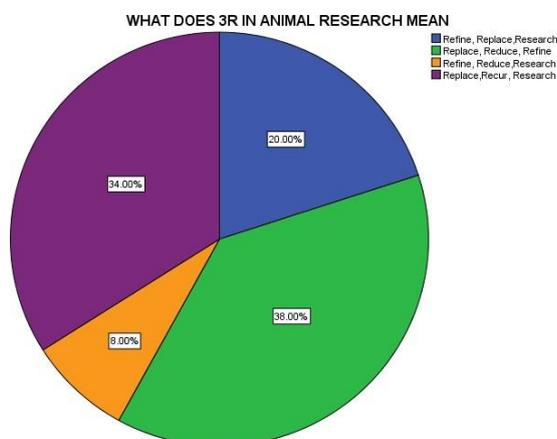


Figure 4: The above chart narrates 38% (green)

answered that 3R in animal research stood for Replace, Reduce, Refine, 34% (violet) Replace, Recur, Research, 20% (blue) Refine, Replace and Research, 8% (amber) Refine, Reduce, Research

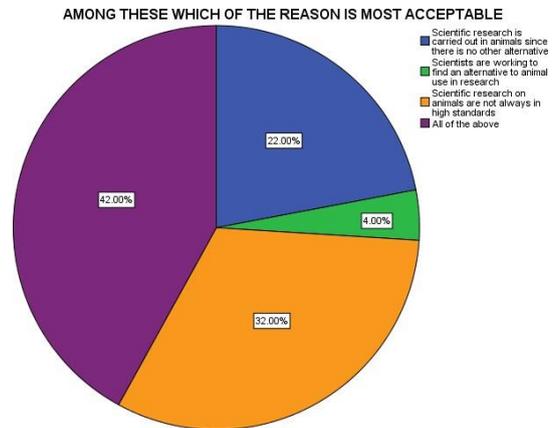


Figure 5: The above chart illustrates with 42% (violet) accepted that all of the above reason is important (Scientific research is carried out in animals since there is no other alternative, Scientists are working to find an alternative to animal use in research, Scientific research on animals are not always in high standards), 32% (amber) went with the reason that Scientific research on animals are not always in high standards, 22% (blue) with Scientific research

carried out in animals since there is no other alternative and 4% (green) as Scientists are working to find an alternative to animal use in research.

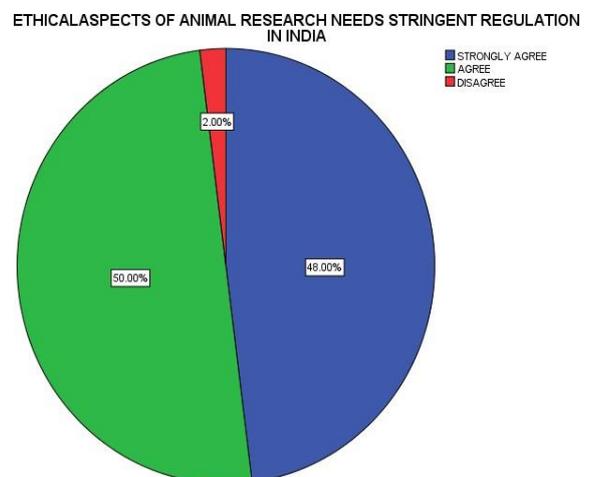


Figure 6: The above pie chart data represent 50% (green) of participants who agree that

stringent regulation is needed in animal ethical research aspects followed by 48% (blue) strongly agree with the statement and least 2% (red) disagree with the statement.

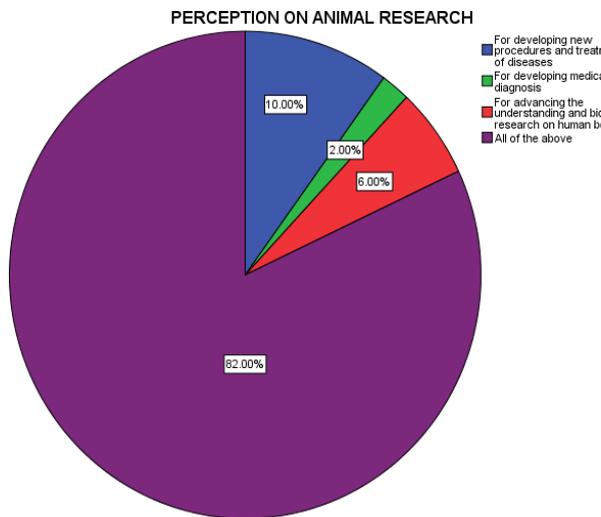


Figure 7: The above chart regarding the perception of animal research revealed 62% (purple) accepted that animal research is for the development of new procedures and treatments of diseases, for development in medical diagnosis and advancement in biological research and understanding. 10% (blue) answered it is only for developing new procedures and treatments of diseases and least 6% (red) opted that perception of animal research is for advancing the biological research and understanding, rest 2% (green) went with medical diagnosis development.

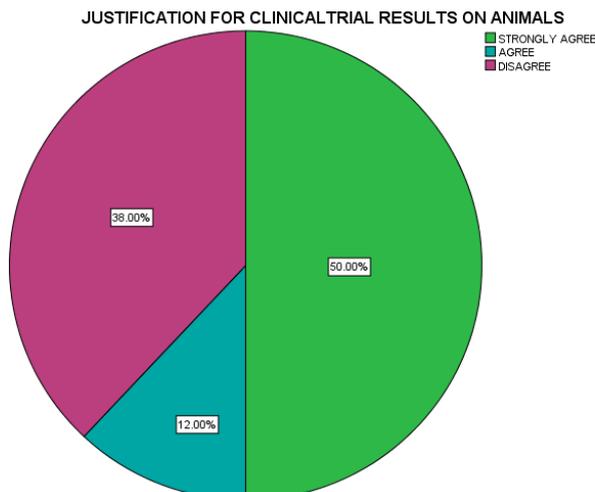


Figure 8: The above chart reproduces 50% (green) participants strongly agree that clinical trial justification is adequate to perform

further clinical study trials in humans, 38% (magenta) disagree with the justification and 12% (turquoise) agree with the clinical trial justification statement.

Conclusion

The survey data provided input to analyze the outlook of medical students and practitioners in Animal interventions and research interest. A multicentre survey study has to be carried out to interpret and scrutinize in-depth different opinions regarding animal trial research among medical apprentices.

Conflict of Interest: NIL

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