

**AWARENESS OF RESEARCHERS TOWARDS RESEARCH ETHICS:
A STUDY OF INSTITUTES UNDER THE DEPARTMENT
OF BIOTECHNOLOGY IN INDIA**

Abstract of Thesis

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BY

SHASHI RAI

Enrollment No. 547/16

SUPERVISOR

DR. M. P. SINGH

Professor

**DEPARTMENT OF LIBRARY & INFORMATION SCIENCE
SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY
BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY
(A CENTRAL UNIVERSITY)**

VIDYA VIHAR, RAEBARELI ROAD, LUCKNOW- 226025

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ABSTRACT

INTRODUCTION

In the present scenario in which each member of the society is talking about ICT and also using it. People are preferring to just Google to get information on anything. The easy availability of information also leads to the questionable practices, here the role of ethics appears.

Ethics are the moral values a person should obey, regardless of the particular time and place. To act ethically implies to do the right thing at the right time i.e. the ethics of Research is closely linked to ethical principles of social responsibility. The academic world revolves around ethics and integrity, where fresh ideas and theories are developed, experiments are carried out and research activities are presented for the betterment of mankind. For purposes of protecting the rights and wellbeing of research participants and reducing the risk for physical and psychological distress and/or threats resulting from research procedure, ethical approval for research is needed.

Researchers are required to know the ins and outs of research ethics and adhere to them at all times. However, they should be warned about the seriousness of disregarding ethics and the actual consequences one must face. There should be presentations with case studies concerning the consequences of unethical research practices at least every three to six months.

Researchers may only be held accountable for the ethical standards they upheld in their own work. They must also consider the perspectives of the people they are working with. Similarly, the supervisor should provide thorough training on research ethics and point the researcher in the right direction whenever they get stuck.

It is not the responsibility of the institute or library alone to ensure that research best practices are followed; the supervisor also plays a significant role in this and should be evaluated often. It should be encouraged for researchers to focus on serving the public

interest rather than succumbing to the intense temptation to produce a high-impact journal article.

STATEMENT OF THE PROBLEM

This study aims at observing the views of researchers in as many disciplines as possible related to the phenomenon of Research ethics; and to assess how much (or less) they are aware of these academic issues and how it is going to affect their studies positively or negatively. In light of the aforementioned, it was decided to carry out this survey among the Researchers who are engaged in such research activity in various autonomous institutes in India that are under the supervision of the Department of Biotechnology. The problem of the present study is entitled as **“AWARENESS OF RESEARCHERS TOWARDS RESEARCH ETHICS: A STUDY OF INSTITUTES UNDER THE DEPARTMENT OF BIOTECHNOLOGY IN INDIA”**

OBJECTIVES OF THE STUDY

The purpose of this study is to examine and explore the level of awareness about Research Ethics among the researchers of autonomous institution funded by the Department of Biotechnology, Ministry of Science and Technology, Government of India.

Following are the objectives of the study -

1. To examine the existing awareness, attitude and perception of Research Ethics among the researchers.
2. To identify the information resources used by the researchers for writing scholarly literature.
3. To identify different tools used by researcher for maintain a strategic relationship with Research Ethics.
4. To identify the causes that leads to violation of Research ethics.
5. To identify the awareness program of Libraries for the Research Ethics.

HYPOTHESES OF THE STUDY

Based on the objective, following are the hypothesis of the study -

Hypothesis 1: The researchers are aware about the Research Ethics.

Hypothesis 2: Researchers are significantly dependent on the internet for writing scholarly literature.

Hypothesis 3: Researchers have lack of knowledge for various tools to maintain a strategic relationship with Research Ethics.

Hypothesis 4: The researchers are not aware about the consequences of violation of Research Ethics as defined in the regulation of concerned institutes.

Hypothesis 5: The Libraries are putting their efforts in generation of awareness regarding Research Ethics among the researchers.

SCOPE AND LIMITATION OF THE STUDY

The scope of the proposed study is restricted to autonomous institution funded by the Department of Biotechnology, Ministry of Science and Technology, Government of India. The same institutions have been covered for the study. The people of the institutions who are involved directly with the research related activities has been considered for the study i.e. the questionnaire was distributed among the faculty members, scientists, research scholars, research associates of the institutions.

The Department of Biotechnology (DBT), Ministry of Science and Technology was setup in 1986 has laid emphasis on promotion of excellence and innovation for discovery. Innovation driven research in biotechnology and modern biology is being facilitated and supported by the Department through its various schemes across the country. The Department has also established 16 theme-based institutions across the country.

The various autonomous institutions which are recognized as autonomous institutes under the Department of Biotechnology, India are as-

1. National Institute of Plant Genome Research (NIPGR), New Delhi, India
2. National Institute of Immunology (NII), New Delhi, India
3. International Centre for Genetic Engineering & Biotechnology (ICGEB),

New Delhi, India

4. Regional Centre for Biotechnology (RCB) , Faridabad, India
5. Translational Health Science and Technology Institute (THSTI), Faridabad, India
6. National Brain Research Centre (NBRC), Haryana, India
7. National Agri-Food Biotechnology Institute (NABI), Mohali, Punjab, India
8. Center of Innovative and Applied Bioprocessing (CIAB), Mohali, Punjab, India
9. Institute of Life Sciences (ILS), Bhubaneshwar, Odisha, India
10. National Institute of Biomedical Genomics (NIBMG), West Bengal, India
11. Institute of Bioresources and Sustainable Development (IBSD), Manipur, India
12. National Centre for Cell Science (NCCS), Pune, India
13. Center for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad, India
14. National Institute of Animal Biotechnology (NIAB), Miyapur, Hyderabad, India
15. Rajiv Gandhi Centre for Biotechnology (RGCB), Kerala, India
16. Institute for Stem Cell Science and Regenerative Medicine (inStem), Bangalore, India

RESEARCH METHODOLOGY

Keeping in view the objectives, the survey method will be used to conduct this study. Questionnaire, observation will be used as a tool for data collection. In the process of collecting data, interviews are also taken personally to cover the gaps in the questionnaire and to clear the doubts of the respondents.

In this study, the researcher has made observation and tried to interact with the faculty, researcher scholars of the institutions, also the interaction has been made with the librarian of the various institutions.

As we all were suffering and badly impacted from the COVID-19 since the year 2019 and hence the it hinders the much of the opportunities. Therefore, the help of Google has been

taken for distribution of online questionnaire as google form to get response for successful conduction of the study.

ORGANIZATION OF THE STUDY

The present study has been organized into the five chapters. A brief description of the chapters is given as:

Chapter 1: Introduction

This is a brief introductory part of the research work introducing the whole aspect of research topic undertaken. It includes Introduction, related terms such as Research, Ethics, Moral, Academic Integrity, etc. along with need of the study, scope, objectives, hypotheses and research methodology have been described. The historical background of Research Ethics has been also elaborated in this chapter.

Chapter 2: Review of Literature

In this chapter, the purpose and reviewed literature of the researcher have been mentioned. For the purpose of fulfilling the research purpose, the researchers also consulted and read various pieces of literature from various information sources such as books, journals, e-databases, newspaper clippings, reports, blogs, and so on. Also, various research ethical guidelines have been studied by the researcher. For references and in- text citation, Publication Manual of the American Psychological Association (APA) 7th edition has been utilized.

Chapter 3: Autonomous Institutes Under Department of Biotechnology, India: A Profile

This chapter provides a brief history of autonomous institutes in India, as well as an introduction to those institutes. These institutes are all functioning under the Department of Biotechnology, Ministry of Science and Technology, India. The current state of their libraries was also referred to several times throughout the chapter.

Chapter 4: Data Analysis and Interpretation

In this chapter, the data analysis and interpretation has been performed. For the study relevant data collected through questionnaire, website visit and personal observation has analysis. Microsoft Excel was used to feed and tabulate the data to find the results. The analysis has been taken based on the objectives and their interpretation were done. Further, the hypotheses have been considered as rejected and accepted on the basis of the analyzed data.

Chapter 5: Findings, Conclusion and Suggestions

This chapter is made up of findings, conclusion, suggestions, and area for further studies. Findings are a collection of summarized form of data interpretations, which are based on previous chapter 4. On the basis of the analysis, the researcher concludes and makes suggestions for the promotion of ethical conduct during research and also about the role that libraries may play to support it for the sake of social benefit. Also, the areas for further research have been stated in the chapter.

MAJOR FINDINGS OF THE STUDY

The following are the specific findings that have been derived from the study based on the analysis and interpretation:

- **Participants of the study:** It was discovered that around 60% of the researchers who took part in the study were male, while only 40% of the researchers were female. This difference in gender involvement was identified among the researchers.
- **Age- group of researchers:** The majority of the people who participated in the study were in the age bracket of 29 to 37 years old, which accounts for 38 percent of the total number of respondents. This demographic represented a large number of researchers.
- **Awareness for Research Ethics:** According to the findings of the study, each researcher possesses an awareness of Research Ethics. After looking at the data and doing some analysis on it, it was discovered that there is not a single respondent who

is unaware of it. As a consequence of this, the finding reveals a substantial level of awareness on the part of the researchers.

- **Attitude and perception regarding Research Ethics:** During the process of data analysis and interpretation, it was discovered that 98% of respondents support ethics because it helps in value research; 96% of respondents said that research ethics is much more than a thought; 98% of respondents said that Research Ethics is the promotion of responsible research practises; the same ratio of participants supported that Research is conducted in an ethical manner ensuring dignity, rights, safety, and privacy within the researcher ecosystem, and 93% researcher has positive attitude for the statement that it is formal conduct to be followed during research work.
- **Opinion towards Activities in Research:** A large majority of respondents, nearly 96%, have stated that they do not agree with the concept that it is ok to fabricate data in order to improve the outcome of research as long as there is no harm to the original research while research is being pursued. The large number of respondents, 84%, refuted the notion that one particular form of study can fulfil the requirements for environmental preservation in its entirety. In addition, this is supported by the fact that, in accordance with the recommendation that was released by the Indian Council of Medical Research, the preservation of the environment should not be forgotten in any research. The majority of respondents (94%) agreed that it is required to obtain informed consent in every situation. The majority of respondents said that the researcher should show respect for the policies and procedures of the institutions that were being investigated. 96% of respondents disagree with the assertion that it is significant to give credit to someone even if they are not contributing to the academic work.
- **Significance for the use of Internet while writing scholarly literature:** The significance and non-importance of respondents' internet use are shown in table 4.11 and graph 4.21. According to the examination of the collected data, it was found that 98% of respondents indicated that they relied heavily on the internet when creating their academic literature.
- **Frequency of Referencing the Works or ideas of other:** The researchers, at various points throughout their research, go back on previous studies in order to get

inspiration and come up with fresh ideas. Then it is also necessary to credit the individual from whom the concept or thinking has been borrowed, since doing so will be ethically sound.

- **Citation Style used for referencing:** Citation styles include those offered by the American Psychological Association, the Modern Language Association, the Chicago Manual of style, and others like the Vancouver System and Harvard, among others. Of these, the citation style provided by the American Psychological Association is the one that is used most frequently by the 866 respondents, making up 60% of the total.
- **Role of Libraries as similarity report provider:** With the assistance of a variety of plagiarism detection tools, a report on the degree of similarity in any given document or research paper may be generated. According to the findings of the survey, 501 respondents (34%) of total respondents, said that their institutional libraries provide them the similarity reports for their scholarly work.
- **Knowledge of various tools to maintain ethical conduct while conducting research:** On evaluation of the relevant data, it was found that 1287 (89%) of the respondents have knowledge about several tools that can help researchers maintain ethical behaviour while conducting research, while only 162 (11%) of these lacked in knowledge of those tools that may assist researchers in maintaining ethical aspects during the pursuit of research.
- **Measure taken to make researcher aware regarding Research Ethics:** Regarding the measures taken to make researchers aware of Research Ethics concerned, conducting meeting and discussion has got maximum vote. This was followed by promoting the researchers to follow the guideline then making them aware regarding consequences and encouraging them for ethical activities during research as the measures taken to make researcher aware regarding Research Ethics.
- **Possible causes for Violation of Research Ethics:** According to the results of the survey, the most likely cause of a violation of research ethics is careless attitude of the researcher, which received 1164 votes. Other possible causes include: the low response rate from respondents, which stands in second place with 1122 votes in

total. Pressure of work took third place with 1094 votes, while a lack of appropriate training came in last as a potential cause.

- **Problem Faced While Combating Unethical Aspect of Research:** According to the analysis of the data, 76% of respondents are dealing with the pressure to meet a deadline, while 24% are not. Only 12% of respondents consider their lack of working skills to be an issue, while 86% do not consider it to be a problem at all. Only 12% of respondents have a problem with not having knowledge to how to avoid something that can be unethical, and only 6% of respondents have a problem with the complex policy of the institute.
- **Awareness of Consequences for Violation of Research Ethics:** It can be seen in both table 4.20 and graph 4.31 that the majority of respondents (94%) are familiar with the repercussions or consequences that can result from violating research ethics in accordance with how they are defined in the regulations of the institution.
- **Contribution of Institutional Libraries to Extend Awareness:** Around 70% of those who participated in the survey gave a positive response to a question about whether or not researchers are being made aware of research ethics through the efforts of institutional libraries. The study illustrates that the Libraries are making an effort for this worthy cause.
- **Perception for contribution of Libraries for promotion of Research Ethics:** The contribution and role of Libraries in the promotion of research ethics were supported by 115 (8%) of the respondents who responded strongly agree and 968 of the respondents (67%) have indicated that they are agree for the contribution of libraries; 321 (22%) of the respondents have replied neutrally; and 6 (3%) of the respondents have indicated that they are in strong disagreement with the involvement of Libraries in the promotion of Research Ethics.

CONCLUSION OF THE STUDY

The present study was conducted among the researchers of autonomous institutes working under the umbrella of the Department of Biotechnology, India. The Research Ethics is very important aspect which is also helping to the value research. A researcher utilizes various information resources to get updated from time to time with the latest update. The result of

the study indicates that the researchers possess a significant level of awareness of the Research Ethics.

In aggregate, the responses that were received for the attitude and perception of research ethics concludes that the researchers have a positive attitude toward research ethics. This is because the majority of them confirmed their viewpoint by selecting the appropriate option. This can be evidenced by the numerous national and international guidelines that have been published in the interest of responsible behaviour in research to maintain research ethics.

The researchers' responses to the questions about their opinions on certain research activities reveal that they are familiar with the many aspects that are involved in research ethics. Even if the researchers are partially aware, it still indicates that they have a positive mindset. This progressive mindset shows that in future they may be fully aware with due course of time.

Based on the examination of the collected data, 98% of respondents mentioned that they relied heavily on the internet when producing their academic literature. In present era of information, communication and technology, the findings of this study are quite pertinent.

In accordance with the findings of the study, it was revealed that the majority of respondents are making an effort to include references and citations for the work or ideas contributed by others, and the researchers have indicated that the American Psychological Association citation style is the one that is most preferred citation style utilized for this purpose.

When it comes to maintaining ethical conduct while conducting research, the majority of researchers are aware of a number of tools, such as software that detects and prevents plagiarism, reference management software, and citation styles.

The causes and problems that are acting as a hurdle and make it hard to fight against unethical aspects of research are as follows: the pressure of work, a low response rate from respondents, a careless attitude on the part of the researcher, a lack of proper training, the pressure of a deadline, a lack of working proficiency, and a lack of knowledge about how to avoid it.

The Libraries are the information resource provider at any educational or research institution. It is dealing with the various legal aspect for the use of resources, therefore, here the role of

Libraries become important and relevant. The majority of respondents have a favourable opinion of the role that libraries play in advancing research ethics. The study is representing that the Libraries are contributing in the promotion and to extent the awareness among the researchers regarding Research Ethics. Also, the significant level of awareness has been revealed from the study for the researchers of the autonomous institutes under the Department of Biotechnology in India.

SUGGESTIONS

In light of the findings of the current survey, the research and the researcher have come up with the suggestion that can be found in the following:

- Researchers are required to have formal training in ethical practise and scope, as well as ethical regulation and repercussions, before they begin working on research topics.
- After visiting the websites of various institutions under DBT, India, it was found by the researcher that there were several institutions where there was no any such type of documented guideline for individual institute for their researcher. Every institute needs to have a set of published rules for research ethics, and those guidelines need to be made available to everyone who works in the institute's research community.
- An awareness programme should be organised from time to time using various programmes, workshops, and conferences. The institutes should paste the pamphlets or upload the research ethics followed by them on respective institute website. Also, it can be made mandatory for each to attain it by keeping records at the departmental level.
- As it is such an essential concept, it needs to be made a required component from the Bachelorette level curriculum at all educational institutions, including colleges and universities.
- The researcher should keep accurate lab records so that mistakes in both the work and the plan may be identified and corrected. Hence, this can function as one of the solutions to the aforementioned problem.
- Through the distribution of consistent circulars and notifications to the various scholars, the institutional libraries have the ability to take the initiative and demonstrate their enthusiastic support for the worthy cause. Additionally, brief

awareness clips and tutorials can be disseminated online and played during workshop interactions in order to assist new researchers in grasping the concept of Research ethics and its importance.

- There have to be official research ethics forum where discussion can be possible and in which individuals may pose their questions and obtain appropriate answers to those questions.
- Researchers are often unaware of the ethical aspects when they are not abiding by them, leading to accidental violations of research ethics. Proper guidance and understanding from the supervisor and support from lab seniors should be encouraged, inculcated, and developed as a mechanism in the institute. The deliberate breaking of rules has to be criticised.

It's possible that they may serve as some kind of measure to avoid unethical aspects of study and encourage ethical aspects of research.

AREA FOR FURTHER RESEARCH

This study is limited to the Autonomous institutes growing under the umbrella of the Department of Biotechnology, India. During the study, the investigator felt that there are many possible topics that can be carried out for the further research-

- Perception of Research Scholar Regarding Research Ethics and Publication Ethics: A Study of Research Scholars of Central Universities in India
- Faculty Perception Towards Contribution of Libraries for Research Ethics: A Study of Indian Institute of Science Education and Research
- Role of Libraries Towards Research Ethics: A Study of National Institute of Technology Libraries
- Researchers Perception Towards Responsible Research Practices: A Comparative Study of Central Universities in India
- Contribution of Central University Libraries Towards Research Ethics: A Study
- Knowledge and Perception about Research Ethics & Academic Integrity Among Research Scholars of Indian Universities: A Study