**A cross sectional study on research practices among doctors in India**

**Abstract**

**Introduction:** When doctors assume the role of a researcher then they have to play from both ends- many a times the enthusiasm of research might play with morality of a physician. The quality of research in India is not at par with most countries and it has a publication share of just 1.59%.

**Objectives:** To find out the research practices of doctors to identify loopholes in research and recommend rectifications.

**Methods:** It is a cross-sectional study done with the help of an anonymous online pre-tested questionnaire. The questionnaire was randomly mailed from a mailing list to 500 doctors of different places and specialties and 100 of them filled the form and participated in the study.

**Results:** Out of the 100 participants, 77 (77%) said that they had received some training or have attended some workshop on research methodology. More than one-fourth of the researchers agreed to modifying data to get desired results and 14% agreed to producing false data owing to the pressure by a supervisor. Almost one-third of the researchers agreed to having deliberately ignored bias or errors in their studies. Twenty-three percent revealed that they do not always take informed consent from their study subjects. More than one-third researchers revealed that they do not seek the permission of the institutional ethics committee before commencing a study. The proportion of researchers having low, medium or high Good Research Practices Score are 15.4%, 21.8% and 62.8% respectively.

**Conclusion:** Majority of researchers indulge in misconduct, knowing and unknowingly. These issues need to be tackled through capacity building, training of investigators and IEC members, strengthening of IEC functioning and encouraging greater community participation.

**Keywords:** Good research practices, doctors, cross sectional study.

**Introduction**

The advancement in evidence based medicine has been possible due to extensive and unrelenting research by doctors. However, when doctors assume the role of researchers then they have to play from both ends and many a times the enthusiasm of researcher might play with morality of a doctor.1 Since long, the experiments done for the greater good often sacrificed a human being’s integrity and safety. This led to the evolution of the guidelines for researchers that keep the participants welfare at the utmost priority.2,3 When we analyze the research environment in India, we often find that the quality of research is not at par with many countries.4 According to the data available till 2008, India holds the twelfth rank among the productive countries in medicine research consisting of 65,745 articles with a global publication share of 1.59%.5 There is a need to integrate the importance of research in the medical curriculum and to empower the doctors with robust skills and knowledge. Research oriented medical education is not getting enough importance in our country owing to lack of funds and manpower resources.6 A study has shown that there are around 100,000 undergraduate medical students in India, out of whom just 0.9% of the students had shown interest in research through various research programs.7 Inclination towards research in the formative years of medical education is imperative in the making of a good researcher, hence there is a good scope of integration of research education in the medical curriculum.

Though it is quite clear that the medical students do not have a high aptitude for research but it is important to know whether this phenomenon is leading to poor research practices among the medical fraternity of the country. There is a scarcity of literature in this field and this study was done to find out the attitude and practices of doctors regarding research.

**Materials & methods**

It is a cross-sectional study done with the help of an anonymous online pre-tested questionnaire. The questionnaire was randomly mailed from a mailing list to 500 doctors of different places and specialties and 100 of them filled the form and participated in the study. The data was analyzed using SPSS software. The study was commenced after taking the approval of the institutional ethical committee. The data was expressed in percentages and p value of less than 0.05 was deemed significant for declaring a difference between variables.

An arbitrary score- the Good Research Practices (GRP) score was calculated based on 14 questions that were asked from the subjects regarding- management of research data, practices regarding research methodology, personal ethical conduct and financial involvement and misconduct. A score of +1 was given for a righteous answer and -1 for a wrong practice. A score of less than 7 was considered as a low GRP score, 7-9 was a medium and >10 was considered as a high GRP score.

**Results**

Of the 500 doctors that were approached for the study, 100 reciprocated and participated in the study. Out of the 100 participants, 77 (77%) said that they had received some training or have attended some workshop on research methodology. The data regarding their place of work and experience has been depicted in ***Table I***.

**Table I. Characteristics of the participants of the study (n=100):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Characteristic** | | **Total Number** | **Number** | **%** |
| 1. | Place of work | Government Hospital | 100 | 7 | 7.0 |
| Government Medical College | 52 | 52.0 |
| Private Hospital/ Private Practice | 9 | 9.0 |
| Private Medical College | 19 | 19.0 |
| Public Health Management- Government Sector | 4 | 4.0 |
| Public Health Management- Non-Government Sector | 9 | 9.0 |
| 2. | Experience in research (in years)\* | <3 | 78 | 16 | 20.5 |
| 3-5 | 31 | 39.7 |
| 6 or more | 31 | 39.7 |

\*Only 78 out of 100 Study subjects were involved in research or had publications. Source: Original

There were two questions assessing the attitude of doctors towards research. When asked whether research papers should be one of the essential/ desirable qualification requirements for promotion in academics, 50% replied with a “yes”, 23% with a “may be” and 27% with a “no”. Also, when asked whether research work deviates doctors from clinical or teaching work, 19% replied with a “yes”, 23% with a “may be” and 58% with a “no”.

More than one-fourth (28.2%) of the researchers agreed that they may have modified data to get desired results and 14% agreed to producing false data owing to the pressure by a supervisor. The responses regarding the data management practices of researchers have been given in ***Table II***.

**Table II. Practices of participants regarding management of research data (n=78):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Question asked** | **Response** | **Number** | **%** |
| 1. | Have you ever modified data to obtain desired results? | May be | 8 | 10.3 |
| No | 56 | 71.8 |
| Yes | 14 | 17.9 |
| 2. | Have you ever produced false data under the pressure of a superior (in case of non-funded project)? | No | 67 | 85.9 |
| Yes | 11 | 14.1 |
| 3. | Have you ever produced false data under the pressure of a sponsor (in case of a funded project)? | No | 58 | 74.4 |
| Not Applicable | 18 | 23.1 |
| Yes | 2 | 2.6 |
| 4. | Do you always preserve primary data till publication of the results? | No | 1 | 1.3 |
| Yes | 77 | 98.7 |
| 5. | Have you ever purposefully withheld data from the scientific community? | No | 75 | 96.2 |
| Yes | 3 | 3.8 |

Source: Original

The responses regarding research methods and good research practices of the researchers have been given in ***Table III***.

**Table III. Practices of participants regarding research methodology: (n=78):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Question asked** | **Response** | **Number** | **%** |
| 1. | Have you ever deliberately ignored bias/ errors in the study? | No | 55 | 70.5 |
| Yes | 23 | 29.5 |
| 2. | Did you always take informed consent from the study subjects of your research? | No | 18 | 23.1 |
| Yes | 60 | 76.9 |
| 3. | Did you always obtain clearance from the institutional ethics review board before starting a research or project? | No | 31 | 39.7 |
| Yes | 47 | 60.3 |
| 4. | Have you ever concealed any conflict of interest? | No | 77 | 98.7 |
| Yes | 1 | 1.3 |

Source: Original

Almost one-third (30.8%) of the researchers have affirmed that they have given undeserving authorship to a supervisor under pressure. The practices regarding the personal ethical conduct of the researchers has been depicted in ***Table IV***.

**Table IV. Practices of participants regarding personal ethical conduct (n=78):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Question asked** | **Response** | **Number** | **%** |
| 1. | Have you ever claimed undeserved authorship? | No | 71 | 91.0 |
| Yes | 7 | 9.0 |
| 2. | Have you ever denied authorship to contributors? | No | 72 | 92.3 |
| Yes | 6 | 7.7 |
| 3. | Have you ever given undeserving authorship under pressure to a supervisor? | No | 54 | 69.2 |
| Yes | 24 | 30.8 |
| 4. | As a reviewer, have you ever abused peer-review like unfairly hold up a rival's publication? | No | 39 | 50.0 |
| Not Applicable | 39 | 50.0 |
| 5. | Have you ever indulged in plagiarism? | No | 76 | 97.4 |
| Yes | 2 | 2.6 |

Source: Original

Majority (61.5%) of the researchers have ever faced financial constraints in their research. The practices regarding financial involvement in research has been depicted in ***Table 5***.

**Table V. Financial involvement & misconduct during research stated by the participants (n=78):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Question asked** | **Response** | **Number** | **%** |
| 1. | Have you ever faced financial constraints in your research? | No | 30 | 38.5 |
| Yes | 48 | 61.5 |
| 2. | Have you ever acquired funding for research from government/ non government agencies? | No | 60 | 76.9 |
| Yes | 18 | 23.1 |
| 3. | Have deadlines given by the funding bodies ever forced you to forge data? | No | 35 | 44.9 |
| Not Applicable | 42 | 53.8 |
| Yes | 1 | 1.3 |
| 4. | Have you ever misused research funds for unauthorized purchases or for personal gain? | No | 41 | 52.6 |
| Not Applicable | 36 | 46.2 |
| Yes | 1 | 1.3 |

Source: Original

The proportion of researchers having low, medium or high Good Research Practices Score are 15.4%, 21.8% and 62.8% respectively (***Figure I).***

The good research practice of taking informed consent is significantly associated with place of work being a government organization (p=0.017). Contrarily, government organizations are also significantly associated with the bad research practice of people claiming undeserved authorship (p=0.042). Six or more number of years of experience was significantly associated with the researcher being a part of an editorial board (p=0.029) or acquiring research funding for projects (p=0.008).

**Discussion**

It is a professional and moral responsibility of a doctor to conduct a research ethically. Every doctor should learn and receive training in the responsible conduct of research and publication, and each project must be reviewed by an institutional review committee.8 We carried out this study to know about the research practices among doctors of various institutions and experience. The findings of the study might be of interest to medical educators, curriculum developers, regulatory bodies and policy makers.

In the current study it was found that the attitude of the doctors towards research was not completely positive and they have their concerns regarding research being a hindrance to medical practice and teaching. The findings are inconsistent with another study done by Mitwalli et al9 in Saudi Arabia, where majority (97.9%) of the participants agreed that research is essential and improves health care and it helps in building a future academic career. Around 20% researchers in the present study agreed to modifying data to achieve desired results. A study done by Sheldon et al10 among Dutch doctors to highlight their research practices stated that a quarter of them have manipulated results. It seems to be a common practice among researchers to manipulate data to their liking. Positive-result bias might be at play here as studies with positive results are often published in journals with a significantly higher impact factor than that of the journals in which negative result studies are published.11

A large number of researchers agreed to having involved in certain unethical research practices like deliberately ignoring biases and errors in their study (30.1%) andnot always taking informed consent (23%). A burning issue in ethics is informed consent. A study done by Sriram et al12 among physicians of India revealed that almost half of the subjects who undertook research, obtained oral consent only. In a country like India where the general public has diverse socio-cultural background, limited literacy and little autonomy, it is a task to communicate complex and technical information of the research.13

Another important aspect to keep in mind while conducting a study is taking permission from the Institutional Ethics Committee (IEC) before commencing the research. The current study reveals that a large number of the researchers (almost 40%) bypass the IEC but the more pertinent question is whether the IECs are good enough or not. A study suggests that IECs are currently still in their infancy in low to middle income countries (LMICs), which may have important implications with regard to the oversight of the protection of human participants.14 At site inspection visits by regulatory authority in India revealed major limitations like inaccurate records keeping, failure to follow investigational plan, failure to notify Institutional Ethics Committee (IEC) of changes, failure to submit progress reports, taking consent, acquiring IEC approval and reporting of adverse drug reactions.15 An Indian Council of Medical Research (ICMR) survey of over 200 IECs in India revealed that many do not meet the ICMR’s ethical guidelines specifically related to structure or function for the conduct of biomedical research with human participants.16 In a study of public sector teaching hospitals in Delhi, only 25% of IEC members had been formally trained in bioethics.17 We cannot expect the research standards to improve until the oversight improves. Thus, there is an urgent need to address the issue of shortage and shortcomings of IECs in terms of their numbers, structure, function and training.

Surprisingly, few unethical practices like concealment of conflict or interest and indulging in plagiarism were owed by a very small number of researchers (1.3% & 2.6% respectively). A study done by Das et al18 on awareness about the issue of conflict of interest suggests that a small number of authors in India are aware about this issue. Even peer-reviewers of journals are little aware of it and those who are, do not bother about it while reviewing the articles.18As far as plagiarism is concerned, literature suggests that it is a problem in mainstream publishing all over the world, including India.19 The findings of the current study are not congruent with the statement due to factors like social desirability bias and lack of awareness.

Another misconduct that deserves mentioning is giving undeserving authorship to supervisors under pressure. Almost one-third researchers replied with a “yes” to the question about giving undeserving authorship to supervisors or seniors under pressure. The practice was significantly associated with those working in a government institution. Surveys have estimated the prevalence of guest/honorary authorship to be at 11-60%.20-22 Authorships are more often gifted by colleagues with lower academic rank or by those with fewer publications to the departmental head, with whose munificence the research is conducted.23 Many a times, junior researchers are open to gifting authorships to senior colleagues so as to oblige them, maintain good relations and increase their chances of acceptance of publication.23 The seniors should keep aside greed and insincerity and should put in some hard work and earn their authorship. It will help the junior researcher in two ways- it will improve the quality of research study owing to experienced input and it would save him/her from violating the International Committee of Medical Journal Editors (ICMJE) guidelines.

It was revealed that more than 60% researchers have ever faced financial constraints in their research and less than one-fourth researchers have acquired funding for their research projects. This finding highlights a major setback that can restrict researchers from conducting good quality research. A recent editorial article of a pioneer journal suggests that an increasing number of research proposals are being turned down by India’s science funding agencies, and money is not being released in time for current projects.24 A study by Naik25 revealed that publications from medical Institutions continue to be poor as only a handful of colleges engage in and promote research owing to lack of financial support. Major reforms are needed in R&D funding for improving the grant approval time by enrolling more expert reviewers and giving them strict deadlines, reducing the humongous paper work, and making the whole process more transparent.

**Conclusion**

Science is based on trust but scientific misconduct is an unfortunate reality of our times. India is an excellent site for research owing to large populations, plenty of researchers and cheap labor and logistics. However, major limitations also exist like lack of formal training in bioethics and research methodology among researchers and IECs committee members, heavy burden of clinical duties and sub-optimal administrative support.26 Majority of researchers indulge in misconduct, knowing and unknowingly. These issues need to be tackled through capacity building, training of investigators and IEC members, strengthening of IEC functioning, facilitating research oriented undergraduate medical teaching and encouraging greater community participation.26

**Limitations**

A low response rate might indicate a response bias, which we have not been able to remove owing to the anonymity of the survey. Despite of the anonymity, a social desirability bias might have come into play and doctors might have answered the questions righteously rather than as a matter of fact.

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