BioScientific Review (BSR)
Volume 7 Issue 4, 2025
ISSN$_{(P)}$: 2663-4198, ISSN$_{(E)}$: 2663-4201
Homepage: https://journals.umt.edu.pk/index.php/bsr

Title:	**Ethics and Integrity: Essential Pillars of Research**
Author (s):	Muhammad Ali[1], Noor Kamil[1], Hafiz Muhammad Mazhar Asjad[2], and Sana Ejaz[1]
Affiliation (s):	[1]Salim Habib University, Karachi, Pakistan [2]Forman Christian College University, Lahore, Pakistan
DOI:	https://doi.org/10.32350/bsr.74.01
History:	Received: August 13, 2025, Revised: September 27, 2025, Accepted: October 07, 2025, Published: October 30, 2025
Citation:	Ali M, Kamil N, Asjad HMM, Ejaz S. Ethics and integrity: Essential pillars of research. *BioSci Rev.* 2025;7(4):01-06. https://doi.org/10.32350/bsr.74.01
Copyright:	© The Authors
Licensing:	This article is open access and is distributed under the terms of Creative Commons Attribution 4.0 International License
Conflict of Interest:	Author(s) declared no conflict of interest

A publication of
The Department of Life Sciences, School of Science
University of Management and Technology, Lahore, Pakistan

LETTER TO EDITOR

Ethics and Integrity: Essential Pillars of Research

Muhammad Ali[1]*, Noor Kamil[1],Hafiz Muhammad Mazhar Asjad[2], and Sana Ejaz[1]

[1]Faculty of Pharmacy, Salim Habib University, Karachi, Pakistan
[2]Department of Pharmacy, Forman Christian College University, Lahore, Pakistan

ABSTRACT

Autonomy, justice, and beneficence are the principles which inform the spirit of scientific research. Further, integrity and ethics are essential pillars of research, followed by respect, transparency, and accountability. This letter to the editor highlights the importance of integrity and ethics in research. It also sheds light on the misconduct related to scientific research writing. Integrity and ethics are important aspects in research and scientific writings. Various international standards are to be followed in biological, clinical, and health sciences research, such as the Declaration of Helsinki and FAIR principles. Scientific journals and publishers strictly ask authors and researchers to follow guidelines and ensure that issues and challenges related to misconduct are overcome. Authors are asked to declare all details related to the patients' or participants' informed consent form, integrity of data, authorship criteria, and conflict of interest declaration statement. Currently, it is observed that plagiarism, fabrication, and falsification are the most common misconducts during research writing, undermining the credibility of scientific writing. Public trust can be obtained by following the ethical rules and regulations related to research integrity which, in turn, would definitely improve the overall quality of scientific writing.

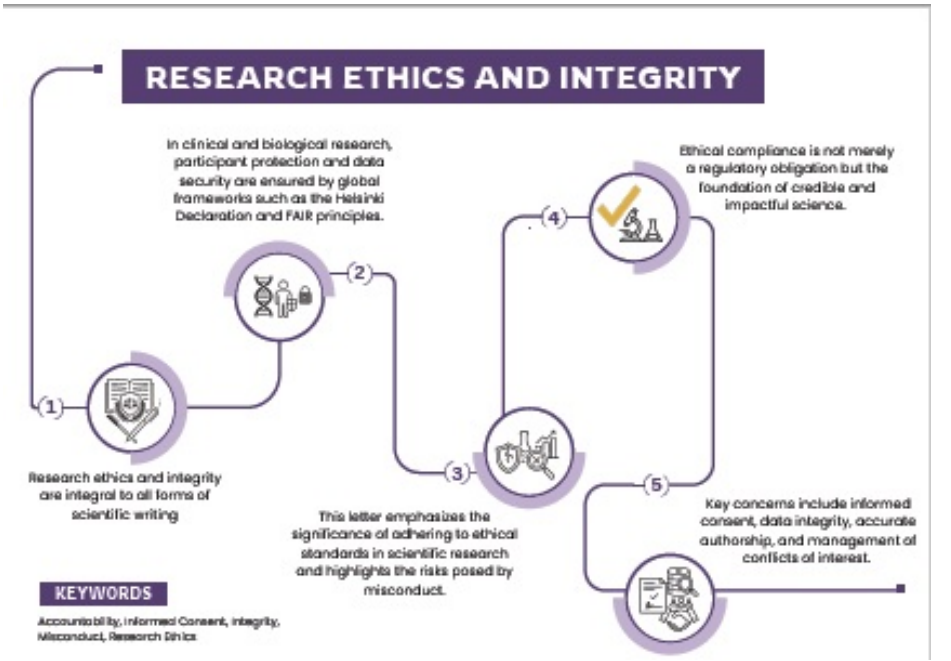
Keywords: ethical research principles**,** informed consent**,** integrity**,** misconduct, scientific writing

Highlights

- The letter outlines essential ethical principles in research that balance scientific progress, human rights, and trust.
- Misconduct during scientific research creates doubts about the credibility of the results.
- Adherence to global guidelines (e.g., Helsinki Declaration, FAIR principles) and mandatory ethics training strengthen research integrity.

*Corresponding author: Qazi.ali@shu.edu.pk

GRAPHICAL ABSTRACT



1. INTRODUCTION

Adherence to research ethics and maintaining research integrity are essential to guide the conduct of research [1]. Other fundamental principles of research include respect for persons, protecting the rights and dignity of research participants, beneficence, ensuring benefits to the society, minimizing harm, non-maleficence, and avoiding harm to research participants and others, autonomy, respecting participants' freedom to make informed decisions and justice, and ensuring fair distribution of benefits and burdens [2]. Research integrity demands honesty and truthfulness in research conduct, reporting, and publication. It should show logical objectivity by avoiding bias and ensuring impartiality [3]. Transparency is also one of the fundamental points to be considered while conducting scientific research [4]. Openness should be adopted and reported in research methods, data, and findings [5]. Accountability is another key point, that is, a researcher should take responsibility for research actions and outcomes [6, 7]. Further, fairness should be maintained and practiced by ensuring equal opportunities and fair treatment [8].

1.1. Key Issues Related to Research Ethics and Integrity

Several key issues are to be considered by researchers while conducting scientific research. Informed consent is to be taken from research participants, ensuring that they understand research risks and benefits. It is mandatory to take informed consent before initiating clinical studies and trials [9]. Handling data responsibly, securely, and with integrity is an important part of data management practices and research ethics [10]. Moreover, authorship criteria

and contributions are also important aspects of research ethics and integrity. Researchers should give credit fairly and accurately, while fulfilling the authorship criteria. Further, conflict of interest is to be addressed properly, so that personal interests are managed to avoid bias. It is a very important point to be considered by researchers, editors, reviewers, and scientific journals. Research misconduct should be checked carefully and matters related to falsification, fabrication, and plagiarism should be addressed justly and logically [11-13].

1.2. How to Promote Research Ethics and Integrity?

People involved in academics and research should know that there are various approaches used to encourage research ethics and integrity. Providing researchers with ethics and integrity training should be a mandatory part of undergraduate/postgraduate curricula. Clear policies and guidelines should be established by the higher education commission or the concerned universities conducting research, while strict monitoring and investigation should be the norm. Research institutions should help to promote and foster an environment that values ethics and integrity in research [14-16].

1.3. Ethics and integrity in biological, health, and clinical sciences research

Ethics and integrity are essential in biological and clinical research. Beneficence (maximizing benefits while minimizing damage), justice (fair participant selection), and informed consent (respecting participant autonomy) are important concepts. Ethical animal research (conducted by adhering to 3Rs: replacement, reduction, refinement), avoiding misconduct (fabrication, falsification, plagiarism), and maintaining rigorous data integrity are all essential. Data should adhere to the FAIR principles (findable, accessible, interoperable, reusable) while maintaining privacy (GDPR/HIPAA) and conflicts of interest must be declared [17]. Further, prudence is necessary in view of new problems, such as predatory publication (fake or counterfeit publishers who do not conduct adequate peer-review, compromising the scientific value of submitted articles and leaving unclear results) and genome editing (CRISPR), a technology that has revolutionized basic, clinical, and applied biological research. AI bias is also an emerging issue these days, jeopardizing the integrity of research writing, particularly in patient-centered research. Various international standards, such as the ICH-GCP, Belmont Report, and Declaration of Helsinki (WMA) [18, 19] provide the gold standard in this regard. Compliance ensures credibility, reproducibility, and public trust. Hence, ethical research is fundamental to biological, health, and therapeutic sciences and comprises not just a set of recommendations [2, 20].

2. CONCLUSION

Ethics and integrity are essential for scientific research to be valid, trustworthy, and reliable. Researchers can promote trust, transparency, and accountability by adhering to the principles of respect, beneficence, non-maleficence, and justice. Maintaining research ethics and integrity is crucial for advancing knowledge and innovation, while also protecting human participants and the environment. By following the basic principles of research ethics and integrity, the validity of scientific research and publications is ensured, with the conduct of research conforming to academic and professional standards.

Author Contribution

Muhammad Ali: conceptualization, supervision, writing – original draft, project administration. **Noor Kamil:** writing-review & editing, visualization. **Hafiz Muhammad Mazhar Asjad:** writing-review & editing, visualization. **Sana Ejaz:** writing – original draft.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

Data availability is not applicable as no new data was created.

Funding Details

No funding has been received for this research.

Generative AI Disclosure Statement

The authors did not used any type of generative artificial intelligence software for this research.

REFERENCES

1. Iphofen R. *Handbook of Research Ethics and Scientific Integrity*. Springer; 2020.
2. Muthanna A, Chaaban Y, Qadhi S. A model of the interrelationship between research ethics and research integrity. *Int J Qual Stud Health Well-Being*. 2024;19(1):e2295151 https://doi.org/10.1080/17482631.2023.2295151
3. Magalhães S. Ethics and integrity in research: why bridging the gap between ethics and integrity matters. *J Acad Ethics*. 2024;22(1):137–147. https://doi.org/10.1007/s10805-024-09504-z
4. Ali M. Publication bias: a brief concept note. *Curr Pharm Res*. 2025;3(2):1–6. https://doi.org/10.32350/cpr.32.01

   Publication bias, however, poses a substantial threat to the integrity of scientific research, impacting the validity and reliability of the findings. Selective reporting of statistically significant data may result in an exaggeration of treatment effects, misleading meta-analyses, and inappropriate clinical practices.
5. Henkel J, Schöberl S, Alexy O. The emergence of openness: how and why firms adopt selective revealing in open innovation. *Res Policy*. 2014;43(5):879–890, https://doi.org/10.1016/j.respol.2013.08.014
6. Foláyan MO, Haire B. What's trust got to do with research: why not accountability? *Front Res Metrics Anal*. 2023;8:e1237742, https://doi.org/10.3389/frma.2023.1237742
7. Edwards A. Responsible research: ways of being a researcher. *British Edu Res J*. 2002;28(2):157–68. https://doi.org/10.1080/01411920120122121
8. Sempa JB, Patil R, Mathewson JD, et al. Aligning the principles and practice of research integrity and research fairness in global health: a mixed-methods study. *BMJ Glob Health*. 2024;9(3):e013917. https://doi.org/10.1136/bmjgh-2023-013917
9. Jawa NA, Boyd JG, Maslove DM, Scott SH, Silver SA. Informed consent practices in clinical research: present and future. *Postgrad Med J*. 2023;99(1175):1033–1042. https://doi.org/10.1093/postmj/qgad039
10. Temara S. Ethics for responsible data research: integrating cybersecurity perspectives in a digital era. In: Throne R, ed. *IRB, Human Research Protections, and Data Ethics for Researchers*. IGI Global Scientific

Publishing; 2025:103–44. https://doi.org/10.4018/979-8-3693-3848-3.ch005

11. Chaddah P. Ethics in research publications: fabrication, falsification, and plagiarism in science. In: *Academic Integrity and Research Quality*. University Grants Commission; 2021:18–33.

12. Bhaskar R, Ola M. Publication misconduct, plagiarism, and research integrity. In: Saharan VA, Kulhari H, Jadhav HR, eds. *Principles of Research Methodology and Ethics in Pharmaceutical Sciences*. CRC Press; 2024:271–310.

13. Rennie D, Gunsalus CK. What is research misconduct? In: Wells F, Farthing M, eds. *Fraud and Misconduct in Biomedical Research*. CRC Press; 2019:29–51.

14. Gul S, Parveen Q, Yousuf MI. Role of research supervisors to implement ethical practices in research of social sciences. *Pak Soc Sci Rev*. 2021;5(4):737–751. http://doi.org/10.35484/pssr.2021(5-IV)56

This study makes recommendations for raising student understanding of research policies and provides statistical evidence for developing policies and guidelines to prevent unethical behavior at university level.

15. Resnik DB, Shamoo AE. Fostering research integrity. *Account Res*. 2017;24(6):367–372. https://doi.org/10.1080/08989621.2017.1334556

16. Kretser A, Murphy D, Bertuzzi S, et al. Scientific integrity principles and best practices: recommendations from a scientific integrity consortium. *Sci Eng Eth*. 2019;25:327–355. https://doi.org/10.1007/s11948-019-00094-3

17. Reer A, Wiebe A, Wang X, Rieger JW. FAIR human neuroscientific data sharing to advance AI driven research and applications: legal frameworks and missing metadata standards. *Front Genet*. 2023;14:e1086802. https://doi.org/10.3389/fgene.2023.1086802

18. Kurihara C, Inoue K, Kai H, et al. Our "WMA Declaration of Helsinki": opinions and proposals from patient and public for research ethics. In: Kurihara C, Greco D, Dhai A, eds. *Ethical Innovation for Global Health: Pandemic, Democracy and Ethics in Research*. Springer; 2023:243–269. https://doi.org/10.1007/978-981-99-6163-4_13

19. Nagai H, Nakazawa E, Akabayashi A. The creation of the Belmont Report and its effect on ethical principles: a historical study. *Monash Bioethics Rev*. 2022;40(2):157–170. https://doi.org/10.1007/s40592-022-00165-5

20. Caplan AL, Redman BK. *Getting to Good: Research Integrity in the Biomedical Science*. Springer; 2018.