

Fraud and deceit in medical and surgical research is more common than we think

Sajid MS, Craciunas L, Baig MK, Sains P, Miles WFA

Department of General & Laparoscopic Colorectal Surgery, Worthing Hospital, Worthing, West Sussex. BN11 2DH. United Kingdom

Introduction

- The integrity of research publications is essential to global scientific enterprise.
- Various recent scientific data related scandals like Hwang Woo-Suk's fake stem-cell lines and Jan Hendrik Schon's duplicated graphs confirmed that fraudulent data can easily be published in prestigious journals of high impact factor without even doubting the extra-ordinary outcomes of the research.
- The fraudulent data based conclusions may also lead to depletion of financial resources in addition to posing threats to human health.
- Fraud and deceit in clinical research corrupts the scientific record and once reported in the paper and electronic media can lead to a loss of public trust in medical research and doctors.

Objective

To discuss the definition, prevalence, types, detection strategy, consequences, prevention and management strategy of fraud and deceit in the medical research.

Methods

Expert opinion based upon the multiple publications by the authors and review of reported and investigated cases of fraud and research in clinical research.

Results

Definition of fraud and deceit in medical research

- *Fabrication, falsification, plagiarism or deception in proposing, carrying out or reporting results of research and deliberate, dangerous or negligent deviations from accepted practice in carrying out research. It includes failure to follow established protocols if this failure results in unreasonable risk or harm to humans, other vertebrates or the environment and facilitating of misconduct in research by collusion in, or concealment of such actions by others.*

(Medical Research Council)

Prevalence

- Based on the number of government confirmed cases in the United States of America, fraud is documented in about 1 in every 100,000 scientists.
- The data derived from PubMed library indicates that 0.02 % articles are retracted due to scientific misconduct, which led to the fact that between 0.02 % and 0.20 % published peer review articles in medical literature are based on fraudulent data or reporting
- Routine audits data collected between 1977 and 1990 by the United States Food and Drug Administration found significant errors up to 10 % - 20 % studies suggesting 2 % clinical researchers being guilty of serious scientific fraud and misconduct.

Detection of fraud and deceit in medical research

- Majority of the high impact peer review journals are using various types of software to detect scientific misconduct arising from plagiarism, self plagiarism, redundant publications and irresponsible authorship.

Results

Types of fraud and deceit in clinical research

- **Plagiarism:** the most common type of scientific fraud. Plagiarism is presenting the work of others either in the form of data, text or theories, as if that was his/her own work, and without signed permission and acknowledgement.
- **Data fabrication:** the invention of data or cases which in real life do not exist and it is perhaps the most egregious example of scientific fraud to publish an article, involving de novo synthesis of research findings.
- **Data falsification:** the maneuvering of research data in such a way that false impression and outcome of research is reported.
- **Ghostwriting:** when someone has made considerable contribution to writing a manuscript and this role is not acknowledged in the article itself.
- **Misuse of statistical techniques:** statistical calculations can be very tricky, complex and misleading due to different analysis approaches.
- **Irresponsible authorship:** the authorship is granted to someone because of being staff member, accord recognition, seniority, friendship, support someone for career development and fear of publish or parish culture rather than due to any direct scientific contribution to the endeavour.
- **Redundant publications:** the publication of same data, hypothesis, discussion points and conclusion in more than two articles by same author, group of authors.

Results

- The quality of care can be jeopardized by the publication of fraudulent and misleading data. If changes in health-care system are introduced based upon the untruthful data, the potential consequences for patients and community are unthinkable.
- Massively reported cases of fraud and deceit in clinical research will only add negative public opinion and perception about clinical investigators, the science they produce and services they offer
- To minimize the fraud and deceit in the United States of America and United Kingdom many regulatory bodies have been established to oversee the process of research conduction and publication.

Conclusion

- Fraud and deceit in clinical research is a widespread complex problem.
- Common forms of fraud plaguing the clinic research include plagiarism, data fabrication, data falsification, ghostwriting, misuse of statistical techniques, inappropriate authorship and redundant publications.
- Fraud in clinical research can result in financial as well as human life loss. It can be detected by various statistical tools and vigilant review process.
- Fraud and deceit in clinical research can be reduced by implementing preventative strategies such as maintaining ethical standards, scientific standards, information standards, health and safety standards and protecting financial and intellectual property rights.