

Scientific research misconducts: An overview

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Introduction

Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results (Anderson, 2013; Breen, 2016; Resnik, 2019). It can occur at many stages of the research process. These include during proposal preparation, data collection, analysis and publication (Amin *et al.*, 2012). The previous studies reported that 2,047 articles were retracted from PubMed in May 2012, with 67% of the articles due to misconduct (Dal-Ré *et al.*, 2020). Besides, the percentage of retracted papers in the year of 2012 were reported to increase by 10-fold compared to the total articles retracted in 1975 (Fang *et al.*, 2012). According to Liu and Chen (2018), the data from Retraction Watch on the 31st July 2017 revealed that the US, China, Germany, Japan and India were the top six countries that had articles retracted.

Types of misconducts

Fabrication of data is a process of creating results and reporting them as real (Chau *et al.*, 2018; Pratt *et al.*, 2019). The example of fabrication is when the researcher

manipulated the original data and presented as two different data sets (Chau *et al.*, 2018). Meanwhile, falsification is defined as modifying research materials such as changing, omitting or replacing the data to improve the results, which is no longer representing the original (All European Academies, 2011; Chau *et al.*, 2018). One example is when the researcher falsifies the data obtained to increase the significance of the published results.

Plagiarism is an act of using other people's work including ideas, processes, results, texts, or specific terms without crediting the source (Olesen *et al.*, 2017; Chau *et al.*, 2018; Dal-Ré *et al.*, 2020). Direct plagiarism, mosaic plagiarism and uncited plagiarism are among the most common type of plagiarisms made by the researcher (Chau *et al.*, 2018). Direct plagiarism is the plagiarism of word-to-word which the whole text is copied verbatim without a proper citation. Meanwhile, mosaic plagiarism is a substitution of the original word with a synonym from the sourced text without a proper citation. On the other hand, the uncited phrase occurs when the information is sufficiently paraphrased; however, no citation is made from the source (Chau *et al.*, 2018).

Reasons for misconducts

There are various reasons for misconduct. A study conducted at three Chinese Tertiary Hospitals revealed that the factors that led to misconduct are pressure from individual morality, the competition of colleagues, promotion, funding, recognition and publishing papers (Yu *et al.*, 2020). Surprisingly, more than 15% of the respondents admitted having committed at least once in fabrication, falsification or plagiarism, with the most common scientific misconduct is inappropriate authorship (Yu *et al.*, 2020).

According to Olesen *et al.* (2018) plagiarism and authorship disputes are the most common misconducts. Authorship disputes include gift authorship, ghost-writer, coercion authorship and admiration authorship. These misconducts were suggested due to the priority given on the publication records over other qualifications. The study also reported that the authorship dispute has become common, especially when the academics are pressured to publish or face delays in the promotion (Olesen *et al.*, 2018). Besides, situational factors, such as when researchers aim for monetary incentives given to those who can publish a paper in Q1 and Q2 articles, can also lead to misconduct.

The organisational factor such as lack of communication between researchers, management and faculty members, and lack of mentoring could also lead to misconduct (Olesen *et al.*, 2018). The study also revealed that the workload, competition and evaluation set to an academic also contributed to a researcher's misconduct. Further, the pressure of 'publish or perish' lead to a hostile working environment thus enhancing misconduct since the researchers will only focus on their individual work rather than teamwork (Olesen *et al.*, 2018). Nevertheless, other study also revealed that an individual with high moral values and integrity would have less tendency to engage in misconduct (Bülow and Helgesson, 2019).

Conclusion

In conclusion, researchers must avoid misconduct to ensure the validity of the data produced, particularly in health science research. More study is also needed to comprehend other underlying factors and identify the prevention measures that can avoid research misconduct.

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