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| Review title and timescale | |
| 1 | Review titleMethods to identify research misconduct and its impact in medical research: A systematic review | |
| 2 | Original language titleEnglish | |
| 3 | Anticipated or actual start dateFebruary 23rd, 2023 | |
| 4 | Anticipated completion dateJune 16th, 2023 | |
| 5 | Stage of review at time of this submission | |
|  | |  |  |  | | --- | --- | --- | | Review stage | Started | Completed | | Preliminary searches |  |  | | Piloting of the study selection process |  |  | | Formal screening of search results against eligibility criteria |  |  | | Data extraction |  |  | | Risk of bias (quality) assessment |  |  | | Data analysis |  |  | | |
|  | Provide any other relevant information about the stage of the review here. | |
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| 12 | Funding sources/sponsors N/A | |
| 13 | Conflicts of interest No | |
| 14 | Collaborators | |
|  |  | |
| N/A  Review methods | |
| 15 | Review question(s)To identify methods to detect research misconduct in medical research | |
| 16 | SearchesSearch strategy is designed for the following databases, and databases searched from January 31st, 2023: Medline (via OVID) and Embase (via OVID). A grey literature search of retraction notices or concern over medical research will be carried out using the Retraction Watch Database, where publisher reasons and independent Retraction Watch reasons are available.Search strategy for both databases:exp Scientific Misconduct/(“Scientific misconduct” or “Research misconduct” or “Scientific fraud” or “Scientific frauds” or “Research fraud” or “Research frauds” or “Scientific dishonesty” or “Scientific dishonesties” or “Research dishonesty” or “Research dishonesties” or “Fraudulent data” or “Ethics in Publishing”).mp1 or 2All research studies including primary and secondary analyses studies describing methods to identify research misconduct such as falsification, fabrication and plagiarism will be included. | |
| 17 | URL to search strategyI give permission for this file to be made publicly availableYes | |
| 18 | Condition or domain being studiedAll research studies including primary and secondary analyses studies describing methods to identify medical research misconduct in medical studies will be included. Research misconduct will be defined according to the US federal policy including falsification, fabrication, and plagiarism. Falsification will be defined as the manipulation of research materials, equipment, or processes, or changing or omitting data, or results such that the research is not accurately represented in the research record. Fabrication will be defined as the making up of data or results. Plagiarism will be defined as the appropriation of another person’s ideas, processes, results, or words without giving appropriate credit. As the definitions are not standardized, any studies describing ‘research misconduct’ in medical research will be included and scrutinized for alignment with one of our sub-definitions. | |
| 19 | Participants/populationInclusion criteria:Studies that investigate research misconduct e.g., fabrication, falsification, or plagiarism.Exclusion criteria:Studies that are not methods of detecting research misconduct e.g., editorials, opinion pieces, peer review. | |
| 20 | Intervention(s), exposure(s)This study will investigate methods to detect research misconduct and the accuracy of these methods. Methods may be empirical and non-empirical. | |
| 21 | Comparator(s)/controlThere will be no control group | |
| 22 | Types of study to be includedAll research studies including primary and secondary analyses studies describing methods to identify falsification, fabrication and plagiarism in medical research will be included. Eligible article types include mixed-methods studies, observational studies, including cross-sectional studies, retrospective and prospective cohort studies, case-controlled studies, editorials, and commentaries. | |
| 23 | ContextEmpirical and non-empirical methods exist which may help identify misconduct such as falsification, fabrication and plagiarism in medical research. Benford’s law is one such empirical method to detect misconduct and compares the distribution in leading digits in observed data to Benford’s relative frequency distribution of leading digits. Another method, central limit theorem can also be used and relies on comparing sample means in large sample studies with normal distributions. Similar approaches can be employed with non-continuous variables such as categorical, where expected binomial distributions are calculated and compared to observed distributions. Monte-Carlo simulations can be used to obtain p-values for observed observations which can be used to accept or reject the null hypothesis. The limitations of all methods stated above include studies with low sample sizes. However, when the methods are applied for multiple papers by the same author/research group they can give us an idea of potential systematic misconduct. | |
| 24 | Primary outcome(s)To identify methods to detect research misconduct in medical research and the impact on clinical management of patients | |
| 25 | Secondary outcomes | |
|  | To assess the accuracy of methods used to detect research misconduct | |
| 26 | Data extraction (selection and coding)Studies will be title/abstract screened by two authors independently using endnote.. Reasons for exclusion will be provided in a table. Reference lists of the included studies will be hand screened for potential studies. Any discrepancies between authors will be resolved by arbitration between the authors.Two authors will independently extract the following data:Methods of detecting research misconductType of research misconductSummary dataIndividua participant dataCriteria of research misconductType of data required for research misconduct: summary data/individual participant dataSoftware required/formula used to detect research misconductImpact on clinical managementAccuracy in the detectionThe number of true positive, true negative, false positive and false negative in detecting research misconduct | |
| 27 | Risk of bias (quality) assessmentWe will use the QUADAS-2 risk of bias tool for diagnostic studies to assess study bias Two independent researchers will independently screen all studies for bias and if there are discrepancies it will be resolved by arbitration between the authors. | |
| 28 | Strategy for data synthesisFor impact on clinical management, we will provide a narrative synthesis of the impact of the research misconduct on clinical management.In the presence of similar criteria used to detect research misconduct in more than one study, we will perform bivariate meta-analysis to calculate the summary sensitivity and specificity of each different method. When meta-analysis is not possible, we will tabulate the sensitivity and specificity of each different method of detecting research misconduct. | |
| 29 | Analysis of subgroups or subsetsIf sufficient data is available, sub-groups analysis will be carried out for effectiveness of method based on study type (preclinical or clinical). | |
| Review general information | |
| 30 | Type and method of reviewSystematic Review | |
| 31 | Language English Will a summary/abstract be made available in English? Yes | |
| 32 | Country United Kingdom | |
| 33 | Reference and/or URL for published protocolN/AI give permission for this file to be made publicly available | |
| 34 | Dissemination plansThe findings of our study will be submitted to a peer-reviewed journal for publication.Do you intend to publish the review on completion? Yes | |
| 35 | Keywords Research misconduct, falsification, fabrication, plagiarism, detection, | |
| 36 | Current review statusReview status should be updated when the review is completed and when it is published.Not started | |