

# A Proposed Research Misconduct Policy for Universities and Postgraduate Colleges in Developing Countries

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## Abstract

Research misconduct policy (RMP) is a legal document that shows the definitions of the various types of misconduct, describes the inquiry and investigation of allegations, and the appropriate penalties that should be imposed. The presence of the adopted RMP on the website of a university or postgraduate college is an indication of the level of commitment to promote the proper handling of misconduct cases. Perusal of the websites of top universities in developing countries revealed that many do not have RMP on their websites. The probable starting point for combating research misconduct at the national or institutional level is by acquisition of RMP. The purpose of this article is to propose a modern, structured and cost-effective RMP for universities and postgraduate colleges in developing countries. The bibliographic database, PubMed, was searched using the terms 'research misconduct' and 'research misconduct policy'. All relevant articles from the search and some RMPs of universities, national agencies and global health organisations available on the Internet were carefully studied. A formulated RMP, based on the Final Rule of the United States, Public Health Services Policies on Research Misconduct of 2005 and the Regulations of the University Grants Commission of India of 2018, is hereby presented. In the proposed RMP, plagiarism was stratified into four levels in ascending order of severity so that imposed penalties are commensurate with the seriousness of misconduct. The zero tolerance for plagiarism in the core work areas was adopted. The proposed RMP was designed to act as a template. It should be modified as required based on the prevailing local circumstances and made fit for purpose. Universities, postgraduate colleges and journals should have RMP on the homepage of their websites.

**Keywords:** Plagiarism, plagiarism policy, research ethics code, research misconduct, research misconduct policy, unethical authorship practices

## INTRODUCTION

The United States of America (USA), in the year 2000, published the federal research misconduct policy (RMP) which required all federal agencies and departments that support research to implement within 1 year either through policies or regulations.<sup>[1]</sup> The uniform definition of research misconduct as fabrication, falsification or plagiarism (FFP) was adopted.<sup>[1]</sup> The decision to exclude other types of serious misconduct from the definition was based on the fact that they were vague and difficult to enforce.<sup>[2]</sup> The comprehensive Final Rule which showed the codified regulations became effective on 16 June 2005.<sup>[3]</sup> Studies performed about 10 years later in 2015, revealed that many institutions have adopted research misconduct policies that went beyond the federal standard

of FFP, and majority of developed countries have national research ethics codes and research misconduct policies.<sup>[4,5]</sup> These documents are readily available in guidance manuals and on websites, which are used to effectively adjudicate when research misconduct is suspected.<sup>[3,5,6]</sup>

While ethics code for research describes how good and responsible research should be performed, RMP is a legal document that shows the definitions of the various types of misconduct and describes the inquiry and investigation of allegations and the appropriate penalties that should be imposed.<sup>[3,5,7,8]</sup> This document will be referred to and it may

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be required that a copy is attached to the verdict of research misconduct adjudication.<sup>[3,6]</sup> The probable starting point for combating research misconduct at the national or institutional level is by acquisition of RMP. All those that perform research should be conversant with this policy and be expected to comply with it.<sup>[6,9]</sup> The presence of the adopted RMP on the website of a national health agency, university, postgraduate college or higher educational institution (HEI), is an indication of the level of commitment to prevent and promote the transparent and proper handling of misconduct.

It is the responsibility of authorities of universities, postgraduate colleges and other HEIs to ensure that employees and students are familiar with the adopted research ethics code and RMP, and to also make these documents readily available, especially on their websites.<sup>[3,6,9]</sup> Perusal of the websites of top 10 universities in Africa, India, Europe and the USA for the availability of RMP revealed that 3, 4, 7 and 10 of top 10 universities in each of these regions, respectively, have RMP on their websites.<sup>[10-13]</sup> All the top 10 universities in the USA have policy on their websites.<sup>[13]</sup> Half have the federal standard policy of FFP and the remaining have something slightly different. Searches of the websites of top 10 universities in each of the five African countries revealed that only 11 of the 50 universities have RMP on websites.<sup>[14-18]</sup> Majority of the universities not in the top 10 in these countries, have no RMP on website. This confirms the fact that many universities and HEIs in developing countries do not have RMP on their websites and therefore, may be unable to properly handle cases of research misconduct. Although only four of the top ten HEIs in India have policy at websites,<sup>[11]</sup> all HEIs in India are expected to obey the University Grants Commission (UGC) (Promotion of Academic Integrity and Prevention of Plagiarism in HEIs) Regulations which came into force in 2018.<sup>[19]</sup> In this policy, plagiarism was quantified into four levels in ascending order of severity so that imposed penalties are commensurate with the seriousness of misconduct.

If resources to generate a new policy are unavailable, non-copyrighted policies may be selected and reviewed to create a fit-for-purpose policy. Creating a RMP from the existing policies requires that author(s) are conversant with all aspects of research ethics code, RMP, editorial process, undergraduate and postgraduate education, related governmental laws and prevailing local circumstances. The purpose of this article was to propose a modern, structured and cost-effective RMP for universities, postgraduate colleges and HEIs in developing countries.

## METHODOLOGY

The bibliographic database, PubMed, was searched using the terms 'research misconduct' and 'research misconduct policy'. All relevant articles from the search were selected and studied. Research misconduct policies of some universities, colleges, national agencies and global health organisations available on the Internet were examined. Public Health Service Policies on

Research Misconduct, Federal Register, USA;<sup>[3]</sup> the research misconduct policies of Boston,<sup>[20]</sup> Brown,<sup>[21]</sup> Emory<sup>[22]</sup> and John Hopkins<sup>[23]</sup> Universities; Universities of Georgia,<sup>[24]</sup> Glasgow,<sup>[9]</sup> Kent,<sup>[25]</sup> Cape Town<sup>[26]</sup> and Lagos;<sup>[27]</sup> the City University of New York;<sup>[28]</sup> Indian Institute of Science Education and Research;<sup>[29]</sup> Medical Research Council Policy<sup>[30]</sup> and Research Councils UK Policy<sup>[6]</sup> were downloaded, printed and studied. Soft copies of the Council of Science Editors' White Paper on Promoting Integrity in Scientific Journal Publications 2012 and 2018 Updates<sup>[31,32]</sup> and the WHO Strategy on Research for Health,<sup>[33]</sup> which are very large documents, were obtained and studied. In addition, the European Code of Conduct for Research Integrity<sup>[7]</sup> and the National Code of Health Research Ethics of the National Health Research Ethics Committee of Nigeria<sup>[34]</sup> were also studied. These documents were the key resources for the formulation of the proposed RMP. RMP documents with copyright were excluded. Vertical analysis by reading all relevant documents and horizontal analysis by comparing similar sections of documents were performed before preparing the proposed RMP.

The proposed RMP is based primarily on the Final Rule of Public Health Service Policies on research misconduct.<sup>[3]</sup> Inputs from the research misconduct policies of the aforementioned agencies, institutions and universities<sup>[6-9,19-34]</sup> were also used in the formulation of the proposed RMP, which is beyond the USA federal standard of FFP. The definitions of fabrication and falsification were expanded to aid detection. Based on experience, some relatively common types of research misconduct were included in the proposed RMP.<sup>[35,36]</sup> The levels of plagiarism and penalties sections of the UGC regulations published in the Gazette of India,<sup>[19]</sup> were used to formulate the corresponding sections of the proposed RMP. The plagiarism policies of two universities in India based on the UGC regulations were used to further fine tune these sections.<sup>[37,38]</sup> The UGC regulations' levels of plagiarism of, Level 0: Similarities up to 10%; Level 1: Similarities above 10% to 40%; Level 2: Similarities above 40% to 60% and Level 3: Similarities above 60%; were critically assessed.<sup>[19]</sup> To reduce the number of borderline cases of allegations requiring investigations and to reduce costs, the following levels of plagiarism; Level 1: Similarity score of 0% to 20%; Level 2: Similarity score of 21% to 40%; Level 3: Similarity score of 41% to 60% and Level 4: Similarity score of 61% and above; were adopted for the proposed RMP. Therefore, a similarity score of up to 20% would be acceptable, and a similarity score of 21% and above will be regarded as plagiarism for the proposed RMP. Efforts were made to prevent the proposed RMP from being overly detailed.

## THE PROPOSED RESEARCH MISCONDUCT POLICY

### Preamble

The research ethics code of the university/postgraduate college showed the rules and regulations required for responsible conduct of research, study, project work, assignment, thesis and dissertation.<sup>[7,27,28]</sup> Undergraduate students, postgraduate

students, researchers, faculty and other members of academic staff are expected to have the appropriate ethical and moral values, and therefore avoid research misconduct.<sup>[7,27,28]</sup> The university/postgraduate college will make every effort to prevent, discourage, punish culprits and stop research misconduct through training, mentoring and supervision.<sup>[7]</sup> The outlined comprehensive policy provides information on what constitute 'research misconduct' including clear definitions, general principles, adjudication procedures and penalties.<sup>[3,22]</sup>

### Policy statements

- 2.1. The University's main responsibility is to create and maintain an academic environment that promotes ethical behaviour in scholarship and serves to prevent misconduct in research.<sup>[3,6,22]</sup>
- 2.2. The University expects that all research that it supports shows impeccable research integrity and adheres to the highest standards of conduct.<sup>[30]</sup>
- 2.3. The University will take all reported allegations of research misconduct seriously and will demand that they are fully, fairly and timely investigated, and that the outcome of the investigation shall be reported appropriately.<sup>[3,30]</sup>
- 2.4. All those found guilty of research misconduct will receive appropriate sanctions/punishment based on the seriousness of the offence; which will include but not limited to reprimand, probation, suspension, debarment, demotion and dismissal. If a criminal offence has been committed, then in addition, the case will be referred to the appropriate governmental agency.<sup>[3]</sup>
- 2.5. This Policy describes the procedures that must be followed in reporting, inquiring into, and investigating such allegations.<sup>[3,22]</sup>

### Scope/applicability

- 3.1. The Policy and Procedure shall apply to all students, research fellows, faculty and members of academic staff who perform research, or have submitted thesis, dissertation, project work, assignment, based on research performed, leading to award of university/postgraduate college degree or diploma.<sup>[3,19,22-24]</sup>
- 3.2. The Policy and Procedure shall apply to all faculty members and academic members of staff who supervise students; or are authors of manuscripts, proceedings, chapter in books, full books or any such documents; or are involved in editorial work of journals/official publications of the university and other institutions.<sup>[19]</sup>
- 3.3. The Policy and Procedure does not supersede or establish an alternative to any existing governmental regulations, procedures, or policies regarding fiscal improprieties, conflict of interest, ethical treatment of human or animal subjects, or criminal matters, all of which remain in effect.<sup>[3,22-24,28]</sup>

### Definitions of the various types of research misconduct

Research misconduct to which this policy applies includes, but is not restricted to, the following:

- 4.1 Failure to obtain University/Institutional ethics committee approval before performance of research on human and animal subjects.<sup>[5,26,27,31-34]</sup>
- 4.2 Fabrication is making up data or results and recording or reporting them.<sup>[3]</sup> Failure to provide research data spreadsheets/records or detection of fabrication in provided research data spreadsheets/records shall constitute fabrication.<sup>[3]</sup>
- 4.3 Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.<sup>[3]</sup> Examination of provided research data spreadsheets/records shall be required to confirm falsification.
- 4.4 Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate attribution.<sup>[3]</sup>
- 4.5 Other Unethical Authorship Practices which include:
  - A. Coercion authorship is where intimidation is used to gain authorship.<sup>[31,32,35]</sup>
  - B. Honorary, guest or gift authorship is when authorship is awarded to acknowledge friendship, to gain favor, and or to give the manuscript a greater sense of legitimacy.<sup>[31,32,35]</sup>
  - C. Ghost authorship is when assignments, course work, theses, dissertations or manuscripts are written by other students or professionals or commercial writers, who are not included as authors or are not acknowledged.<sup>[31,32,35]</sup>
  - D. Mutual support authorship is when two or more researchers place their names on each other's manuscripts to enhance their productivity.<sup>[35]</sup>
- 4.6 Misconduct related to research misconduct inquiries and or investigations.<sup>[4,5]</sup> This includes retaliation for good faith misconduct allegations, and making knowingly false and malicious misconduct allegations.<sup>[4,5]</sup>
- 4.7 Research misconduct by reviewers and editors of University journals and official publications.<sup>[30,36]</sup> This includes improper conduct of peer review; failure to disclose conflicts of interest; inadequate disclosure of clearly limited competence; misappropriation, breach of confidentiality or abuse of material provided in confidence for peer review purposes.<sup>[30,36]</sup>
- 4.8 Definition of Plagiarism using Similar index and zero tolerance policy in core work areas:<sup>[19,37,38]</sup>
  - A. Plagiarism involves copying of phrases, clauses, sentences, paragraphs, or longer extracts from published or unpublished works including from internet without acknowledgement of the source.<sup>[19,37,38]</sup> This contemporary definition of plagiarism using similarity index and zero tolerance for unintentional/intentional plagiarism in the core areas of thesis/dissertation/monograph/manuscript will be endorsed and adopted by the University.
  - B. Every student submitting a thesis, dissertation, or any

other such documents to the University shall submit an undertaking indicating that the document has been prepared by him or her and that the document is his/her original work and free of any type of research misconduct. The undertaking shall include the fact that the document has been duly checked through a plagiarism detection tool approved by the University.

- C. The similarity checks for plagiarism shall exclude the following:
1. All quoted work reproduced with necessary permission and/or attribution.<sup>[19]</sup>
  2. All references, bibliography, table of content, preface and acknowledgements.<sup>[19]</sup>
  3. All generic terms, laws, standard symbols and standard equations.<sup>[19]</sup>
  4. It shall also exclude common knowledge or coincidental terms, up to fourteen (11 to 14) consecutive words.<sup>[19, 37]</sup>
- D. The core work carried out by the student, faculty, researcher and academic staff, shall be based on original ideas and shall be covered by zero tolerance policy on plagiarism. In case plagiarism is established in the core work claimed, then the University shall impose maximum penalty. The core work areas shall include abstract, summary, hypothesis, observations, results, conclusions and recommendations only and shall not have any similarities.<sup>[19, 37]</sup>
- E. Levels of Plagiarism; Plagiarism will be stratified into the following levels in ascending order of severity for the purpose of its definition in the non-core work areas:
- Level 1: Similarity score of 0% to 20%
  - Level 2: Similarity score of 21% to 40%
  - Level 3: Similarity score of 41% to 60%
  - Level 4: Similarity score of 61% and above.

Because the core work areas shall not have any similarities, then the similarity index for thesis, dissertation, monogram, manuscript and any such document, is representative of the similarity score for non-core work areas which shall include introduction, literature review, methodology, discussion, tables, figures and images. A similarity index of 20% and below in the non-core work areas shall not be penalised as it is expected that methodologies of research projects may be similar.

### Requirements for findings of research misconduct

The principles of natural justice shall be followed while deciding on allegation of research misconduct. A finding of research misconduct made under this part requires that:<sup>[3]</sup>

- 5.1 There be a significant departure from accepted practices of the relevant research community; and
- 5.2 The misconduct be committed intentionally, knowingly, or recklessly; and
- 5.3 The allegation be proven by a preponderance of the evidence.
- 5.4 Research misconduct does not include honest error or differences of opinion.

### General principles

- A. Responsibility to Report Research Misconduct: All University/Postgraduate College/HEI members to whom this Policy applies must immediately report any observed or suspected research misconduct to their Faculty Dean (FD)/Head of Department (HOD)/Research Integrity Officer (RIO)/Administrative Official (AO)/Principal Officer/Deputy Vice Chancellor (DVC). Individuals may also make anonymous reports via calls or E-mails.<sup>[3, 22]</sup>
- B. Responsibility to Cooperate with Inquiries and Investigations: All students, faculty, researchers and academic members of staff and agents of the University are obliged to mandatorily cooperate fully with the DVC, FD, HOD, RIO, AO and other officials in charge of allegations and the conduct of any proceedings under this Policy.<sup>[3, 22, 27]</sup>
- C. Inform Researchers and Administrators of this Policy: The University shall ensure that her students, faculty, researchers and academic members of staff who are involved in research are aware of and are familiar with this Policy, and the importance of compliance.<sup>[3, 22]</sup> The approved policy shall be placed on the homepage of the university's website.<sup>[19]</sup>
- D. An enquiry is warranted: If the allegation falls within the definitions of research misconduct in the RMP, when allegation is received within 6 years of when misconduct occurred, and is sufficiently credible and specific so that potential evidence of research misconduct may be identified.<sup>[3]</sup> Respondent must be notified of the allegation of research misconduct before beginning of the investigation.<sup>[3]</sup>
- E. Interim Administrative Actions/Sanctions: During a research misconduct proceeding, the University, has the right to take any administrative actions/sanctions necessary to protect the health and safety of research subjects; funds or resources of sponsors; University's reputation and academic integrity; and to comply with any applicable governmental laws, regulations or policies.<sup>[3, 22]</sup>
- F. Non-Exclusivity of this Policy: The fact that proceedings are brought under this policy does not preclude additional proceedings before other Universities, Postgraduate Colleges, HEIs and/or under other policies or regulations.<sup>[3, 22]</sup>
- G. Confidentiality: The DVC, FD, RIO, AO, committee members and other University officials involved in the conduct of proceedings under this Policy shall limit the disclosure of information to those who need to know in order to fulfil requirements of the Policy.<sup>[3, 22]</sup>
- H. Costs: All costs incurred by the Office of the DVC, FD, Research Integrity (ORI), RIO, AO, and during research misconduct proceedings shall be borne by the University/Postgraduate College.<sup>[22]</sup>

### Faculty academic integrity panel

- 7.1 Each faculty of the University/Postgraduate College/HEI shall have a Faculty Academic Integrity Panel (FAIP), which shall be a standing committee for the Inquiry and Investigation of research misconduct.<sup>[3, 19]</sup> The FAIP shall

consist of the FD (who shall be the Chairman during his/her tenure), three Senior Professors and one AO from the Faculty. The tenure of the members shall be 3 years. The quorum for the meetings shall be 4 out of 5 members (including Chairman). The HOD of the Respondent may be invited to join the Committee. The FAIP may interview the complainant(s) and respondent if required.

- 7.2 The FAIP shall follow the principles of natural justice while deciding on the allegation of research misconduct against the respondent.
- 7.3 The FAIP shall have the power to assess the level of plagiarism and recommend penalty(s) accordingly.
- 7.4 The FAIP after investigation shall submit its report with the recommendation on penalties to be imposed to the University Academic Integrity Panel (UAIP) within a period of 45 days from the date of receipt of complaint/initiation of the proceedings.

### University academic integrity panel

- 8.1 The University (Postgraduate College) shall have a UAIP, which shall be a standing committee for research misconduct.<sup>[3,19,22]</sup> The UAIP shall consist of the DVC (Academics) (who shall be the Chairman during his/her tenure), the University RIO, the University AO and three Senior Professors. The tenure of the members shall be 5 years. The quorum for the meetings shall be 4 out of 6 members (including Chairman). In cases of serious misconduct, institutional legal adviser and or external lawyer and external scientific expert in related field, should be invited to join the panel.<sup>[3,6,22,24,25,28]</sup> The UAIP may interview the complainant(s) and respondent if required.<sup>[3,6,19,37,38]</sup>
- 8.2 The UAIP shall consider the recommendations of FAIP.
- 8.3 The UAIP shall also investigate cases of research misconduct as per the provisions mentioned in this Policy
- 8.4 The UAIP shall follow the principles of natural justice while deciding on the allegation of research misconduct against the respondent.
- 8.5 The UAIP shall have the power to review the recommendations of FAIP including penalties with due justification.
- 8.6 Once an investigation into an allegation of research misconduct has been initiated, it must continue until a conclusion is reached in order to uphold the reputation of the university, fulfil contractual obligations and protect the interests of funding bodies or publishers.<sup>[25]</sup>
- 8.7 The UAIP shall send the report including recommendation on penalties to be imposed to the Senate within a period of 45 days from the date of receipt of recommendation of FAIP/complaint/initiation of the proceedings, for ratification and action.
- 8.8 The UAIP shall provide a copy of the report to the respondent(s) against whom inquiry report is submitted.

### Roles and responsibilities

Set forth below are the roles and responsibilities of the various persons who are involved in proceedings under this Policy;<sup>[3,22]</sup>

- 9.1 RIO: A Senior Academic Staff/Non-Academic Staff, will serve as the RIO.<sup>[28]</sup> The RIO shall be familiar with the policy and shall be responsible for the general oversight and administration of proceedings of the policy
- 9.2 AO: A Senior Non-Academic Staff, will serve as the AO.<sup>[3]</sup> The AO shall assist the RIO and shall act as the RIO, when the RIO is unavailable. The AO shall be the Secretary of the UAIP.
- 9.3 Complainant: The Complainant is the person who brings forward allegations under this policy.<sup>[3,20-24]</sup> The complainant shall make all allegations in good faith, maintain confidentiality and cooperate with FAIP or UAIP. The complainant shall be interviewed as a part of the misconduct proceeding under this Policy.
- 9.4 Respondent: The respondent is the person against whom allegations are brought.<sup>[3,20-22]</sup> The respondent shall maintain confidentiality and cooperate with the RIO. The Respondent shall be interviewed as a part of misconduct proceeding under this Policy.

### Plagiarism checking committee

University/Postgraduate College should obtain subscription of a plagiarism check software (PCS).<sup>[19,37,38]</sup> It should be available in the university's Central Library. Any student, researcher, faculty and staff who wishes to submit his/her final thesis, dissertation, research paper, article, or any other such documents to the university or to some other agency, shall be required to submit the soft copy of the thesis/dissertation/manuscript to the librarian for the plagiarism check prior to final submission. The librarian shall supply the soft copy of the report generated on the PCS and soft copy of the document to the FAIP, UAIP and to the concerned person.<sup>[19,37,38]</sup>

### Suggested penalties for various types of research misconduct

Administrative actions/penalties may include; letter of reprimand, rustication, withdrawal of degree, removal of the responsible person from the particular project, special monitoring of future work, suspension without salary, salary reduction, initiation of steps leading to possible rank reduction, termination of employment, or restitution of funds as appropriate.<sup>[3,19,20-30,37,38]</sup>

- 11.1. Research Misconduct 4.1; Failure to obtain ethics approval;
  - No injury to research animals and subjects; letter of reprimand, removal from project, cancellation of project or automatic zero for project.
  - Injury to research animals and subjects substantiated; cancellation of project, automatic zero for project, denial of right to one or two successive annual increments, rank reduction, rustication or termination of employment.
- 11.2. Research Misconduct 4.2 and 4.3; Fabrication and or Falsification;
  - Cancellation of project, automatic zero for project,

denial of right to one or two successive annual increments, rank reduction, rustication or termination of employment.

#### 11.3 Research Misconduct 4.5, 4.6 and 4.7;

Letter of reprimand, removal from project, cancellation of project, automatic zero for project, denial of right to one or two successive annual increments, rank reduction, rustication or termination of employment.

#### 11.4 Research Misconduct 4.4; Plagiarism;<sup>[19,37,38]</sup>

A. Level 1 Plagiarism (similarity score of 0% to 20%): When the similarity is due to use of quotes, phrases and sentences of others without the authors writing in their own words or is not of such nature that directly affects the original findings of research; then there shall be no penalty;

1. Student/Candidate; Should be allowed to revise thesis/dissertation using their own words and re-submitting after reducing similarity score to 10% and below.
2. Faculty/Academic member of staff; published proceedings, articles, monograms, chapters in books and books shall be accepted for promotion exercise if similarity score is below or equal to 20%.

B. Level 2 Plagiarism (Similarity score of 21% to 40%): When the plagiarism is a result of negligence or without intent to cheat and the similarity score is 21% to 40%;

1. Student/Candidate; may be allowed to resubmit the work with proper citations within 3 to 6 months after reducing similarity score to below 10%.
2. Faculty/Academic member of staff; published proceedings, articles, monograms, chapters in books and books shall not be counted or accepted for promotion exercise.

C. Level 3 Plagiarism (Similarity score of 41% to 60%): When the plagiarism is a result of inappropriate citations; copying of large numbers of consecutive words and or paragraphs;

1. Student/Candidate; shall be debarred from submitting a revised thesis/dissertation for a period of 1 year and shall be allowed to resubmit the work with proper citations, similarity score of below 10% and with a letter of reprimand not to repeat the mistake again otherwise registration in the programme will be cancelled.
2. Faculty/Academic member of staff; published proceedings, articles, monograms, chapters in books and books shall not be counted or accepted for promotion exercise in addition to denial of right to one annual increment. The supervisor shall not be allowed to supervise new undergraduate/postgraduate students for a period of 2 years.

D. Level 4 Plagiarism (Similarity score of and above 61%) and Plagiarism in core work areas: When the plagiarism is deliberate, planned, massive and blatant,

involving copying of many paragraphs, figures, images and artwork or copying another thesis/dissertation partly or completely; or in core work areas;

1. Student/Candidate; registration in the programme shall be cancelled.
2. Faculty/Academic member of staff; published proceedings, articles, monograms, chapters in books and books shall not be counted or accepted for promotion exercise, in addition to denial of right to two annual increments, rank reduction, suspension without pay, and or termination of employment. The supervisor shall not be allowed to supervise new undergraduate/postgraduate students for a period of 3 years.

### Appeal

The respondent shall have the right to appeal a finding of research misconduct to the RIO within 10 days of receipt by the respondent of the final report.<sup>[3,22-24]</sup>

### Record retention

The RIO shall keep a complete file of the misconduct proceedings for 7 years beyond completion of the case.<sup>[3,22,24]</sup>

### DISCUSSION

Research misconduct has become a worldwide problem.<sup>[39]</sup> This misconduct damages the credibility of research, undermines trust and degrades the relationships among researchers.<sup>[7]</sup> Authorship benefits of academic promotion, professional development and financial rewards sometimes act as the incentives for bypassing the rigorous ethics codes for responsible conduct of research.<sup>[40]</sup> Misconduct can be particularly problematic when it leads to inappropriate weighting and double-counting of study results, which distorts the available evidence.<sup>[41]</sup> Occasionally, it exposes research subjects, animals and the public to unnecessary harm.<sup>[7]</sup> Every effort must be made to prevent, discourage, punish culprits and stop research misconduct through training, mentoring and supervision.<sup>[7]</sup>

The presented proposed RMP is based on the Department of Health and Human Services 42 CFR Parts 50 and 93, Public Health Services Policies on Research Misconduct, Final Rule, which became effective in 2005 and the UGC regulations published in the Gazette of India which came into force in 2018.<sup>[3,19]</sup> The Final Rule implemented necessary legislative and policy changes after public comments.<sup>[3]</sup> It described the general aspects, definitions, institutional inquiry, investigation procedures, responsibilities and administrative actions to be applied.<sup>[3]</sup> It is a 32-page, well-written, comprehensive RMP document. It can be called the foundation RMP. The UGC regulations of India is a structured policy that quantified plagiarism into four levels in ascending order of severity and has zero tolerance for plagiarism in the core work areas. It described the composition and functions of panels, texts for exclusion from similarity checks, the levels of plagiarism and penalties for plagiarism. The proposed RMP was formulated by combining these two documents and filling residual gaps

with inputs from RMPs of aforementioned universities, agencies and institutions. Universities, postgraduate colleges and HEIs in developing countries can use it as a template or copy segments of it to formulate their fit-for-purpose RMP. The ORI, USA, takes research misconduct very seriously.<sup>[42]</sup> The Final Rule, misconduct case summaries and the list of those who currently have imposed administrative actions against them are available on the ORI website.<sup>[42]</sup> University commissions, research institutes, universities, postgraduate colleges and HEIs in developing countries should take research misconduct seriously and hence formulate their RMPs which should be available on the homepage of their websites.<sup>[3,19,37]</sup>

The proposed RMP has sections on preamble, policy statements, scope, definitions, general principles, composition of panels, roles and responsibilities, suggested penalties, appeal and record retention. The various types of research misconduct included in the proposed RMP are failure to obtain institutional ethics committee approval before performance of research, FFP, unethical authorship practices, misconduct related to research misconduct inquiries and investigations and misconduct by reviewers and editors of journals and official publications. It is expected that these types of research misconduct should be easy to detect even in low-income countries. Other types of misconduct covered by national policies of some developed countries included violating confidentiality, human and animal research violations and misappropriation of research funds.<sup>[5]</sup> It is advisable that national agencies and institutions in developing countries start by formulating and implementing basic RMP limited to FFP or slightly beyond and then expand scope as experience is gained and funds become more readily available.

Performing research without ethics committee approval is a serious misconduct.<sup>[5,26,27,31-34]</sup> In universities and postgraduate colleges, supervisors of theses and dissertations on researches that involve humans and animals must view the original copy of ethics committee approval letter before commencement of research. They must ensure that researches are performed according to protocol and within approved dates.<sup>[31-34]</sup> They must also ensure that subjects enrolled signed the informed consent form.<sup>[34]</sup> Similarly, editors should at least, view the scanned copy of the ethics committee approval letter and ensure that the name and address of the ethics committee responsible, protocol number and date of approval are documented in the methodology section of published articles.<sup>[43]</sup> More attention should be focused on detecting fabrication and falsification which unlike plagiarism do not presently have tools for detection. Failure to provide research data spreadsheets or records by authors or detection of fabrication and or falsification in provided research data spreadsheets or records should constitute fabrication and/or falsification.<sup>[3]</sup> All sample sizes that are not appropriately supported by the duration of the study, hospital admission rates or other factors, should raise suspicion and necessitate request for research data spreadsheets or records, which should be adequately scrutinised. It should be quite easy to detect coercion, guest, gift, ghost and mutual support authorships.<sup>[31,32,35]</sup>

Plagiarism is the most common type of research misconduct.<sup>[44-47]</sup> An early definition, described it as the appropriation of another person's ideas, processes, results or words without giving appropriate attribution.<sup>[3]</sup> It is a heterogeneous misconduct that ranges from the unintentional to intentional and blatant types.<sup>[35,44-48]</sup> After the advent of plagiarism detection tools in 1997, it became possible to electronically check the similarity of texts of submitted manuscripts, theses or dissertations against web contents, databases of earlier publications and documents.<sup>[49]</sup> Interpreting originality reports that emanate from plagiarism checks requires tremendous amount of expertise.<sup>[49]</sup> The acceptable cut-off similarity index for plagiarism is still difficult to determine.<sup>[49,50]</sup> High similarity index usually indicates plagiarism, but a low index does not rule out plagiarism.<sup>[46,50]</sup> Plagiarism in any form or of any percentage should be unacceptable.<sup>[51]</sup> The new concepts of zero tolerance for plagiarism in the core work areas and quantifying plagiarism into four levels in ascending order of severity so that imposed penalties are commensurate with the seriousness of misconduct,<sup>[19]</sup> will go a long way in streamlining RMPs worldwide. Global editorial guidance and implementation of comprehensive anti-plagiarism strategy are urgently required.<sup>[47]</sup>

The levels of plagiarism for the proposed RMP are different and unique. Similarity index of up to 20% was adopted to cover for unintentional plagiarism and similarities in the methodology section. This cut-off index of 20% is expected to reduce the number of borderline cases of plagiarism requiring investigation and the running costs of panels. It was shown that increasing the overall similarity index (OSI) threshold from 5% to 15% decreased the sensitivity from 97% to 66% but increased the specificity from 17% to 83% for detecting plagiarism.<sup>[50]</sup> Generally, OSI threshold for plagiarism of 15% to 25% and 5% similarity score from one source are acceptable.<sup>[38,49,52,53]</sup> If similarity index is 20% and below, students and candidates should be allowed to revise their theses and dissertations using their own words and re-submit after reducing similarity index to 10% and below. Documents should be checked for plagiarism before submission to the plagiarism checking committee of the university and all authors should ensure that similarity index score detected is below the adopted threshold. Negligence should not be condoned. Publications of researchers and members of staff should be accepted for promotion exercise if the OSI is 20% and below. Consensus on acceptable OSI threshold is urgently required.

Strong opinion expressed in 2013 indicated that developing countries are inadequately prepared to take action against research misconduct.<sup>[54,55]</sup> Lack of resources, policies and experience have been identified as major reasons why prevention of research misconduct and punishment of culprits have been largely neglected.<sup>[56]</sup> Concerns about legal action also contribute to the reluctance to take action.<sup>[56]</sup> Controlling and combating research misconduct will require a joint effort from universities, research institutes and governments.<sup>[54,55]</sup> To reap the immense benefits of research, developing countries

must allocate appropriate funds for research.<sup>[33]</sup> University commissions and research institutes in developing countries must formulate and adopt their basic RMP and must also mandate universities, postgraduate colleges and HEIs to have written RMP document.<sup>[3]</sup> Arbitrary adjudication without RMP should not be allowed. The Senates of universities and postgraduate colleges have the right to determine the penalties for various offences and can therefore adopt some of the penalties for research misconduct in the proposed RMP. Vigorous implementation of standard RMP by all stakeholders will eventually stop research misconduct.

## CONCLUSION

Moving from no RMP to formulation of RMP to RMP on homepage of website to setting up panels to investigate research misconduct cases and punishing culprits, is a long journey. Acquisition of RMP is the starting point of the journey towards the transparent and proper handling of research misconduct cases. The proposed RMP was designed to act as a template. It should be used when formulating RMP.

## Recommendation

University commissions, research institutes and related government agencies in developing countries must formulate and adopt their basic RMP and must also mandate universities, postgraduate colleges and HEIs to have written RMP document which must be available on the homepage of their websites.

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## Conflicts of interest

There are no conflicts of interest.

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