Building Trust in Academia: The Importance of Research Integrity (RI) in Developing Nations

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ABSTRACT

The disapproval of research misconduct can be considered as research integrity (RI) and misconduct can be defined as offensive activities namely plagiarism, fabrication and falsification of research data. These activities are considered as Big Three and it can mitigate by adhering to principles of honesty, transparency, and accountability. Further, RI can be treated as a precious component in scholarly world which measures the credibility, reliability, and advancement of academic research. There is a shortage of scholarly resources and organizations in developing nations when compared to the developed nations due to financial constraints, lack of technological advancements and required training facilities. However, RI plays a significant role in developing nations and it builds trust in academia by way of supporting ethical research practices and thereby maintaining credibility and reliability of research output. In this research study, it is covered the many facets of RI such as key principles, breaches of RI, common challenges and strategies to promote RI, Sri Lanka scenario and other developing nations in general and how to mitigate research misconduct to build trust among academia and the public.

1. Introduction

Researchers conduct their research in a proper responsible manner within a lawful, and skilled outline with protecting its values and that can be considered as research integrity (ENERI, 2019). In this context, researchers would be able to build trust among academia, public and organizations by maintaining validity and reliability of their work. However, it is evident that there are high number of RI related issues such as scientific cheating and extensive complications with doubtful research and that sort of activities can be treated as research misconduct that includes "fabrication (making up results), falsification (manipulating processes and results), and plagiarism (stealing other's work)" which is called **'Big Three'**. However, more damage could be done to the research piece by **'questionable research practices'** than the 'Big Three'. Questionable research practices can be described as publishing parts of research more than once without adding new things or no new contribution. It

reveals the researchers' irresponsibility, carelessness, improper author list-ing, and mislead-ing analytical data.

Thus, it is crucial to strengthen RI among researchers and research institutions and thereby mitigate the violations of good research practices which break the trust. In this context, it is crystal clear that safeguarding RI is a vital aspect of maintaining the credibility and trustwor-thiness of the scholarly community. Researchers, research organizations, and other stake-holders are responsible to develop and preserve RI for the sake of building sound research culture. "The rotten apples are the result of an unhealthy garden. To reduce the number of rotten apples, we must develop a healthy research culture" (Roje, Buljan & Marušiæ, 2023).

Key Principles of Research Integrity

It is mandatory to maintain RI for the credibility of research findings, advancement of knowl-edge and to safeguard the public trust in research. Researchers can ensure that their work is both reliable and respected by adhering to ethical principles and promoting research integ-rity. There is no single fixed definition for RI, as it is always dynamic, and it means different things to different people. It can be a set of high ideals and principles for some scholars such as trustworthy, honest, careful, and rigorous in all research activities that guide academic work (Nichols-Casebolt, 2012). Research misconduct can be defined as improper activities such as plagiarism, falsifying data, and fabrication of data and normally RI is identified in difference to research misconduct (Low, 2009). Further, RI is essential for maintaining credibil-ity and reliability of research output. Moreover, RI covers a set of key principles which ensure that research is conducted in a manner that is transparent, accountable, fair, respectful for participants, rigor and honest. In this context, it guides the researchers in conducting their work ethically and responsibly. Steneck (2006) pointed out that importance of honesty as it covers reporting data, results, methods, and procedures accurately and thereby presenting their findings truthfully and without fabrication, falsification, or unsuitable data manipulation. Moreover, as described by Resnik (2015) it is the responsibility of researchers who conduct the research to be accountable to the public, their colleagues, and themselves and being willing to explain and justify their work. In the same vein, Wager & Kleinert (2011) described transparency in research which means being open about the methodologies and procedures used in the research process. In this way, researchers should provide adequate detail to allow others to reproduce their studies. Similarly, Shamoo & Resnik (2009) added fairness that provides suitable credit to others' contributions and guarantees that all persons in-volved in the research process are treated impartially. In the same vein, it is the responsibility of researchers to provide due recognition to other participants who are involved in their research in a way of obtaining informed consent and certifying confidentiality. In this manner, researchers make a bond with other participants that they are not going to disclose any confidential information to the public. This consent should be taken before the data collection. At this juncture, researchers safeguard the ethics of the RI. Further, Godecharle, Nemery & Dierickx (2014) expressed the idea on rigor which involves the quality of research. As de-scribed by them, researchers should maintain the highest quality of their research by using suitable methodology and keep the accuracy levels as well as meticulousness of the research as much as possible.

Breaches of Research Integrity (RI)

Research integrity can be considered as a foundation stone of credible and reliable academic research outcome. Breaches of RI can happen due to Big Three which severely harm the trustworthiness of research findings. The first component of the Big Three, Fabrication en-gages in creating data and registering them as real which means creating fake data and presenting it in research papers, reports, or presentations. As an example, it can be survey data or laboratory results that aligned with a required hypothesis and that sort of fabrication would mislead other scholars, waste resources, and possibly harm public community if the false findings are applied in practice. Fabrication is one of the most unsuitable forms of re-search misconduct which produces false reports as real ones (Steneck, 2006).

The second component of Big Three, **Falsification** manipulates data or the processes of re-search and accomplish anticipated outcomes. In this context, findings of the research can misrepresent by way of changing actual data. For example, researchers can change the data to

support their hypothesis and thereby undermine the reliability of research which eventually lead to inappropriate conclusions. This sort of finding produces negative results in real world situations. In this context, it is clear that falsification produces incorrect knowledge (Fanelli, 2009).

The last component is **Plagiarism** produces someone else's research outcome, data or idea, images without giving credit to the original author. It violates ethical standards. In the same vein, it disrespects the original creator's contributions, misleads research output and wears away trust among researchers and the public. According to Resnik (2015) plagiarism can be defined as a serious ethical breach that undermines the integrity of the research output by misrepresenting the intellectual contributions of others. In this context, plagiarism has become a serious breaches of research integrity that harms the reliability and credibility of scientific research, leading to a potential loss of public trust in science. It needs a commitment to ethical research practices, strong institutional policies, and effective education and training programs to address these issues. Further, academia can protect the RI by combating the above forms of research misconduct.

Common Challenges and Strategies for Promotion of Research Integrity
Plagiarism, Fabrication and Falsification, Conflict of Interest and Data Management Issues can be highlighted as common challenges. RI can be promoted through education and training, establishing clear, accessible policies and guidelines on research conduct, regularly updating policies to reflect new ethical challenges and standards, encouraging a thorough and impartial peer review process, providing strong mentoring to young researchers on ethical standards and professional conduct, creating an environment that supports ethical research practices, providing resources and support for handling ethical dilemmas and reporting misconduct, promoting open science practices, including pre-registration of studies and open access to data and publications, encouraging the repetition of studies to verify findings.

Ethical Research Practices in Sri Lanka
Research integrity incorporates various ethical principles and practices by supporting honesty, transparency, and rigor in all aspects of the research process, from the conception of ideas to the dissemination of findings. In Sri Lanka, efforts to promote research integrity are guided by institutional policies, professional codes of conduct, and regulatory frameworks. In Sri Lanka, there are many academic and research organizations, funding agencies play significant role in implementation of standards for RI and those standards are frequently integrate guidelines for authorship, data management, conflict of interest disclosure, peer review, and the responsible conduct of research. Not only that, but there is also a contribution from Sri Lankan academic institutions and international partners to the promotion of RI. Though there are supports to mitigate the breaches of RI, challenges to research integrity persist in Sri Lanka, such as plagiarism, data fabrication, and inadequate oversight of research practices. It is required collaborative effort from the academia to overcome the challenges which still exists and to maintain academic excellence and the reputation of scholarly efforts. At this juncture, there is a dynamic contribution from all sectors of the country to build vibrant research culture and thereby protect the dignity of scholarly community in Sri Lanka, being a developing nation in the South Asian region. Thus, protecting the dignity of Sri Lankan scholarly community by way of protecting RI have become pre-condition for research development.

Prevention of Research Misconduct (Big Three)
There are three ways of research misconduct that can happen namely "fabrication, falsification, and plagiarism." In the same vein, there is an increased focus on research integrity (RI) due to uncertain, doubtful research practices which is called "questionable research practices." The trustworthiness of such practices is questionable. At this juncture, preventive actions have been taken by issuing declarations, forming code of conduct, and establishing international organizations. However, there is a slight difference in the need for research integrity support. Thus, more attention has been drawn to rectify the issue and manage the research misconduct. According to the existing literature, it is suggested to maintain transparency and accuracy when collecting data. Inaccuracy of data can be treated as research misconduct. Therefore, it is followed the ethics, effective communication among team members and pay attention to detail while conducting research. Data is shared promptly to main

tain the research project standards. There is a research bonus system to encourage and support researchers, and such employees in organizations get promotions in their subject field. Young researchers can publish their research papers in local academic journals. In Sri Lanka, academic universities, research institutions publish many journals, conduct research symposiums and proceedings to encourage fresh researchers. Research allowances are added to the monthly salary to encourage academic researchers in Sri Lankan universities. Moreover, it is included academic publications when make recruitments to higher positions of universities such as vice chancellor, senior lecturer, librarian etc. Academic researchers are given bonus points for their publications for scholarly jobs. In the academic field, researchers who have conducted research are treated as assets to their universities/research institutes. Therefore, it is crucial to maintain a vibrant research culture avoiding research misconduct among the scholarly community to protect the reliability, validity and accuracy of their research output, locally and globally.

Challenges to Research Integrity in Developing Countries

Developing countries often face limited access to funding, advanced technology, and educational resources, which can delay the ability to conduct high-quality research (Agnoli et al., 2017) and this leads to questionable practices which has become a challenge to the RI in developing nations. In this context, researchers tend to achieve their goals by mis-conducting RI. As mentioned by Tindana et al. (2017), there is an inadequacy of trainings in ethics of research and integrity for researchers in developing nations and it leads to the violation of the principles of RI as they do not get proper knowledge on ethical research practices. Moreover, there is no proper mechanism for monitoring and enforcing research integrity in these regions. This leads to plagiarism, data fabrication, and falsification (Kalichman & Plemmons, 2007). On the other hand, researchers can engage with malpractices of research due to the pressure they get from the community to publish their research in prestigious journals which has become a threat to maintain the RI (Bennett et al., 2010). In this context, it is crystal clear the challenges faced by researchers in developing nations and how difficult it is to build the trust in academia. Though there are many difficulties, developing nations are making a lot of efforts to promote RI and mitigate research misconduct as much as possible.

Efforts to Promote Research Integrity and Its Impact on the Scholarly Community

The importance of training researchers in ethics and integrity has been identified by the developing nations and educational initiative's purpose to build a solid foundation of ethical awareness and best practices (Resnik, 2015). Further, actions such as establishing ethics committees and adopting international standards have been taken to develop and implement sound policies and procedures for monitoring and enforcing research integrity (Nuyens, 2005). According to Benatar (2002), it is important to make partnerships with developed nations institutions to obtain valuable resources and expertise knowledge. This sort of collaborative action supports capacity building and promotes a culture of integrity through shared knowledge and standards. It is essential to maintain RI to prove the credibility and reliability of research output and upholding these values guarantees that research contributes positively to global knowledge and addresses local challenges effectively. In the same vein, it eventually boosts reputation of institutions and researchers, facilitating greater collaboration and funding opportunities (Steneck, 2006).

Bottlenecks in Promoting Research Integrity in Developing Countries

There are quite a few bottlenecks that interrupt the efforts of promoting RI in developing countries which eventually leads to significant delaying the implementation of sound ethical practices for the advancement of research. At this juncture, budgetary constraints, dearth of infrastructural facilities have become major challenges to promote RI environment in developing nations. This has been clearly pointed out Agnoli et al. (2017) and they emphasized the importance of ethical practices on research to maintain the quality, validity and reliability of research. In the same vein, Bennett et al. (2010) stated that inadequacy of proper research set-up such as knowledge databases, laboratories, and access to scholarly literature, would affect the quality and integrity of research. Similarly, Kalichman & Plemmons (2007) expressed that lack of proper training and education on research ethics would be a critical issue and that leads to unintended misconduct in research in developing nations. Resnik (2015) stated that there is a limitation on ethics training and for the chances for professional development which are essential components of maintaining

updated and best practices of research. Further, Steneck (2006) pointed out that not having strong institutional policies, weak implementation mechanisms which undermine the upgrade of RI, and it leads to continue the unethical practices. According to Tindana et al. (2017) there is a shortage of healthy mechanisms on institutional base to conduct review boards or ethics committees on research activities and address misconduct of RI. Fanelli (2009) has taken cultural and social factors as one of the bottlenecks which affect to promote RI as there are cultures that do not make aware research misconduct which leads to its normalization. Benatar (2002) pointed out hierarchical issues that hinder reporting misconduct of senior researchers if any, due to the fear of revenge. This is a common issue in academia in developing nations and this has happened due to the junior researcher's dependence on senior researchers for their research activities. Bennett et al. (2010) expressed high impact journals and how it leads to unethical practices of RI. At this juncture, researchers are inclined to publish on the above journals due to the academic recognition and it leads Big Three of research misconduct. In the same vein, Stroebe et al. (2012) added that more unethical practices can happen due to the competitiveness in academia and that leads to misconduct the RI principles. Further, Kleinert & Wager (2011) stated that there are few chances for international collaboration to obtain resources and expertise knowledge to promote RI and that limitation causes a bottleneck. At this juncture, Benatar (2002) added that there can be a restriction for exchange of knowledge and best practices in research ethics due to the limited interaction with developed countries academia. Similarly, Resnik (2015) pointed out technological limitations of plagiarism detection software and advanced data management systems which hinder the promotion of RI and make a difficult situation to maintain the research standards. Moreover, Steneck (2006) described the lack of digital literacy among academic community in developing nations which affects to promote RI. In this context, it is crystal clear the importance of addressing the issues such as increasing funding and resources, enhancing education and training, establishment of institutional frameworks, disabling cultural and social barriers, minimizing publication pressures, promoting international collaboration, and improving access to technology which needs sound approach to face the challenges and promote RI in order to support ethical and reliable research.

Findings, Recommendations and Conclusion

There are significant challenges as well as openings for growth and improvement in RI. Developing nations can expand their research practices by addressing resource limitations, enhancing training, and strengthening institutional backgrounds. In this manner, they can attest to conduct ethical, reliable, and impactful research. According to the existing literature, it is revealed that there is no discussion or no national body to deal with misconduct of research in developing countries. Thus, there should be a national system for preventing, investigating, punishing, and correcting research misconduct. This responsibility should be taken by universities and research institutions in developing countries. However, it is evident that there is a lack of such a system in developed countries research institutions too. Moreover, when there is a research misconduct due to a leading researcher, it gives a bad image to the institute s/he serves. Research misconduct can be denied when there is a logical reason. However, there are countries that take long time to provide systematic response. It is evident developing countries have reached at least a discussion stage. There should be its own system for each country to face this challenge and maintain the research integrity. It is required a multifaceted approach for involving education, strong institutional policies, adequate resources, international collaboration, a culture of integrity, technology, and awareness to promote RI in developing nations and thereby promote the quality and reliability of their research, contributing positively to the global community. Thus, it is essential to give priority to provide funds for research and ethics training programs, implementation of funding system to promote ethical research practices, support rigorous and honest research by way of providing library and laboratory facilities, helping to access scholarly literature and technology to support rigorous and ethical research. Further, it is necessary to add all-inclusive ethics education into educational curriculum, introduce courses on research ethics and make those courses mandatory to all research students/professionals, update academia on best practices on RI, develop sound policies and frameworks to maintain RI, make clear demarcation on research conduct and misconduct, unethical practices, empowerment of ethics committees to review research proposals, monitoring mechanism for ongoing research projects, add value to the cultures who promote RI, inspire senior researchers to maintain ethical behavior and to be example to the juniors, implement award

system for the researchers who maintain ethical standards, strengthen international collaborations to provide expertise and share priceless resources, facilitate knowledge transfer and capacity building, usage of technology to support RI, and finally, raise awareness through campaigns and outreach programs, publications and media about the importance of research integrity among the public, policymakers, and the academia.

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