

## Letter to the editor

# The role of ethics and research integrity in the training of health professionals and in the development of human research

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## ABSTRACT

This paper presents a review of issues concerning research integrity and ethics. The components of research integrity and ethical behavior are critical for education in institutions. These aspects are essential when engaging in research and for the identification of these elements in research papers. This knowledge will contribute to successful and evidence-based approaches when individuals are working with patients, teaching, or engaging in research.

**Keywords:** Scientific Misconduct; Ethics; Scientific Publication Ethics; Orientation

Research integrity and ethical conduct have been widely discussed as important issues in the scientific community. These factors are understood as the use of honest and verifiable methods in proposing, executing, and evaluating research. Research integrity includes adherence to rules, regulations, guidelines, and accepted codes and standards<sup>1,2</sup>.

Research values include honesty, accuracy, efficiency, and objectivity<sup>1</sup>. Researchers must convey information with intellectual honesty. This involves sincerity and the absence of deceit. Accuracy involves precise statistical analysis and correctly assessing the value of a population parameter. Efficiency involves the ability to achieve results without wasting or misusing resources, efforts, or funds. Objectivity refers to the prevention of bias that may interfere with research, such as the interference of the beliefs or values of the researcher.

Research integrity is an essential requirement for professionals who work in all areas of health. Integrity is absent when a researcher engages in fabrication or falsification of data or plagiarism.

Three theories have predominated in the history of ethical principles<sup>3</sup>. Deontological theory was introduced in the 18th century by Kant. This theory addresses the morality or the ethics of an action in relation to absolute rules that have been established within society. For example, it would be unethical for a clinician to misrepresent research results or provide an intervention approach or product that has not been shown to have an evidence-based result. Consequentialist theory involves the consequences of the path of action used to solve a dilemma<sup>4</sup>. For example, if the chosen path to solve a dilemma is unethical, consequences may result in a negative outcome. In this case, the consequences of falsifying results may include wasted funding, loss of reputation, or harmful effects. Pragmatic theory evolved in the 20th century. This theory contends that morality evolves over time and is strongly correlated with the development of scientific knowledge. For example, research that emerged in the mid-1900's heralded evidence-based methods for assessment and intervention. Through attendance at conferences and reading research in evidence-based journals, students and professionals can follow the progress in the ever-changing landscape of scientific research.

The main ethical duties of researchers derive from universal scientific ethical values<sup>5</sup>. Bioethics is

a shared and reflective examination of the moral and ethical issues that emerge from health care, health science, and health policy. These factors play a role in classroom and media discussions. There is an intrinsic commitment for the researcher to respect the presuppositions of scientific communication, as well as the disclosure of qualified results<sup>6</sup>.

At the international level, several universities have required that researchers conduct research according to high standards of honesty, rigor, transparency, open communication, and respect for all participants and subjects studied<sup>7</sup>. Most professions are ruled by a Code of Ethics. Ethical conduct consists of behaviors and decisions that benefit patients. Ethical behaviors also play a role in diagnosis, assessment, and/or treatment. Within ethical thought, a decision-making process involves the consideration of alternative paths of action, along with a consideration of potential responses or outcomes related to each path. Negative consequences may result if the chosen path of action conflicts with ethical principles<sup>8</sup>.

Despite the universal recognition of integrity and ethical behaviors, there have been instances of unethical conduct. For example, a professor and an associate published 100 papers on the topic of Parkinson's disease<sup>9</sup>. An investigation found that this research had never been conducted and that supporting data for the supposed research were absent. Further investigation found fraudulent application for public and private funding while presenting false reports on research progress.

An investigation found that there were at least 30 allegations of research misconduct between 2012-2015<sup>10</sup>. Data obtained under the Freedom of Information rules identified hundreds of allegations at 23 universities over a similar time period. These examples point to a growing concern across the globe regarding research integrity and ethical conduct. Thus, it is important that universities and institutions educate students, confirm that there is an ethical committee approval for research, and review the research efforts to determine ethical conduct.

Another area of unethical conduct is associated with predatory journals<sup>11</sup>. Predatory journals are those that accept papers with no interest in quality or ethical research. These journals lack peer review and surprise authors with payment charges after publication. It is estimated that 18,000 funded biomedical research

studies can be found in questionable journals, with less than half of research studies reporting approval from an ethics committee<sup>11</sup>. In contrast, investigations show ethics committee approval in 70% of (non-predatory) mainstream journals<sup>11</sup>.

Scientific research must be based on scientific procedures that are appropriate to the questions of the research. Questions must provide relevant knowledge, avoid unnecessary replication, and have technical or theoretical support that leads to the ability to replicate studies. The author must also report authorship contributions and follow international guidelines. The research disclosed must be cautiously planned and written, with methodological and ethical rigor<sup>12</sup>.

International agencies have recently required that funded studies release the data they have collected for public use. In addition, they require that this information be available for checking by outside parties to determine ethical research. Although the training of health professionals focuses on clinical practice, it is important that these topics be understood whether these individuals conduct research. This theme extends beyond research and affects the performance of professionals in contemporary society, regardless of whether it is in management, clinic or research. In addition, it is important to understand biostatistics, to check if the research statistical analysis draws a false conclusion.

The World Health Organization provides guidelines for research that describe research ethics<sup>13</sup>. These guidelines state that research must adhere to ethical principles to protect the dignity, rights, and welfare of research participants. To achieve this goal, research involving humans should be reviewed by an ethics committee to ensure that the appropriate ethical standards are being upheld.

To consolidate a high-level scientific community, it is important to encourage continuing education and national and international collaboration to share and develop knowledge. Creativity, ethics, and integrity in research practices are essential<sup>2</sup>. In the world, the approach to these practices has been a recurring theme in the agendas of scientific policies of main research centers<sup>1,2</sup>.

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