# Medical Ethics in Morphological Research

# Ética médica en la investigación morfológica

DOI: https://dx.doi.org/10.17981/ingecuc.21.1.2025.06

Original Research.
Date Received: 09/02/2025, Date Accepted: 12/05/2025.

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To cite this paper
J. Díaz-Vallejo, J. Duque-Parra, C. González-Correa & J. Duque-Colorado "Medical Ethics in Morphological Research," *INGE CUC*, vol. 21, no. 1, 2025. DOI: https://dx.doi.org/10.17981/ingecuc.21.1.2025.06

**Abstract**

Morphological research serves as a fundamental pillar in the advancement of anatomical and medical knowledge, with broad applications in education, surgery, pathology, and forensic medicine. However, ethical considerations in this field remain largely overlooked and insufficiently regulated. Historically, the use of cadavers in anatomical studies has posed significant ethical challenges, ranging from the acquisition of bodies without consent to the present-day lack of specific regulatory frameworks. This article explores the existing gaps in applied ethics within morphological research, highlighting the urgent need for well-defined regulations and strict adherence to universal bioethical principles.

**Keywords:** medical ethics, anatomy, informed consent, research

**Resumen**

La investigación morfológica constituye un pilar fundamental en el avance del conocimiento anatómico y médico, con amplias aplicaciones en educación, cirugía, patología y medicina forense. Sin embargo, las consideraciones éticas en este campo siguen siendo en gran medida ignoradas y carecen de una regulación adecuada. Históricamente, el uso de cadáveres en estudios anatómicos ha planteado importantes desafíos éticos, desde la obtención de cuerpos sin consentimiento hasta la actual falta de marcos normativos específicos. Este artículo analiza las brechas existentes en la ética aplicada a la investigación morfológica, subrayando la urgente necesidad de regulaciones claras y el estricto cumplimiento de los principios bioéticos universales.

**Palabras Clave:** ética médica, anatomía, consentimiento informado, investigación

## I. INTRODUCTION

Morphological research is fundamental for advancing medical and anatomical knowledge, with direct applications in education, surgery, pathology, and forensic medicine [1], [2]. Despite its relevance, ethics in this field remains a widely neglected aspect. The historical development of anatomy and morphology has been marked by ethical dilemmas, from the dissection of cadavers without consent in past centuries to current debates on the use of bodies. In many institutions, undergraduate and postgraduate students conduct anatomical studies in dissection rooms without deep reflection on the origin of the cadavers used. Although respect for bodies is encouraged in some amphitheaters, in most cases, these come from forensic morgues as 'unclaimed bodies' without ensuring compliance with fundamental bioethical principles. Although body donation is a more ethical alternative, it remains rare [3].

Research in anatomy is often based on studies carried out in amphitheaters or in the osteological collection of the basic sciences departments of universities with health faculties. However, most of these studies do not mention the approval of an ethics committee, probably due to the lack of regulation in this field or the perception that such studies could be exempt from bioethical review. Properly regulating these investigations is crucial to ensuring compliance with universal bioethical principles [4].

There are regulations such as the Declaration of Helsinki, the Belmont Report, and the guidelines of the International Council of Organizations of Medical Sciences (CIOMS) that have established fundamental principles governing medical research. However, guidelines for morphological research are limited [5], [6], [7].

Despite these limited advances, morphological research still faces ethical challenges, especially regarding informed consent, anonymity of anatomical data, and transparency in how biological specimens are collected and used. Significant knowledge gaps remain concerning the effective application of these principles across various scientific and educational contexts, as well as regarding the perception of ethics in morphology by researchers and teachers. This manuscript aims to analyze the knowledge gap in medical ethics applied to morphological research.

## II. FUNDAMENTALS OF MEDICAL ETHICS IN RESEARCH

Medical ethics in research is a fundamental pillar in ensuring that scientific studies respect human dignity and comply with universal bioethical principles. In the context of morphological research, where one handles tissues, cadavers, and anatomical specimens, applying these principles is essential to avoid practices that violate scientific and professional ethics.

### Fundamental bioethical principles

The development of bioethics has made it possible to establish four essential principles that govern medical research.

-*Autonomy:* implies respect for the capacity of individuals to make informed decisions about their participation in research [8]. In morphological research, studies involving unclaimed cadavers or donations lacking clear documentation of prior consent undermine this principle.

-*Beneficence:* requires that all research aim to promote the well-being of the subjects involved and maximize the benefits derived from the study [9]. In anatomy, this principle means that the knowledge generated should have significant medical applications, and the use of human remains must serve a legitimate purpose.

-*Nonmaleficence:* Establishes the obligation to avoid harm or damage [10]. In morphological research, this implies that procedures are carried out with respect and under strict standards of scientific and ethical quality.

-*Justice:* ensures that research does not generate inequities or favor certain groups to the detriment of others [11]. In this area, it could be related to equity in access to body donation and the use of human remains in a transparent manner and without undue exploitation.

### International regulations and standards

At a global level, various regulations have been established to ensure that medical research is carried out under rigorous ethical criteria. Among the most relevant are:

-*Declaration of Helsinki:* key document of the World Medical Association that establishes ethical principles for research involving human subjects, highlighting the need for informed consent and ethical review of studies [5].

-*Belmont Report:* Defines the fundamental ethical principles in biomedical research and establishes clear guidelines for respect for persons, beneficence, and justice [6].

-*CIOMS International Ethical Guidelines:* developed in collaboration with the World Health Organization (WHO), provide recommendations on ethics in biomedical research, emphasizing the protection of vulnerable populations and obtaining consent [7].

- *UNESCO Convention on Bioethics and Human Rights:* Document that establishes global ethical principles, emphasizing respect for human dignity, the integrity of research, and the protection of study subjects [12].

In these previous regulations, there are no specific regulations for morphological research on cadavers, so it remains a challenge. The lack of specific regulatory frameworks in some countries has allowed the persistence of practices that, although historically accepted, do not meet current ethical standards. Therefore, it is essential to strengthen the supervision of these investigations and ensure the effective implementation of the bioethical and regulatory principles established at the international level [4].

## III. ETHICAL CONSIDERATIONS IN MORPHOLOGICAL RESEARCH

### History and evolution of ethics in anatomy

Anatomical practice has a complex and controversial history, marked by practices that at one time crossed the line between scientific advancement and the violation of religious principles of the time, which probably began in the 3rd century BCE in Alexandria, with the first documented dissection in humans, performed by Herophilus and Erasistratus [13]. Over the centuries, ethics in anatomy have evolved from questionable practices to a more respectful approach with the prior consent of the person or their relatives [14], [15].

### Modern ethical standards

In many countries, cadavers used in amphitheaters and anatomy laboratories come from unclaimed individuals in forensic morgues, raising concerns about respect for human dignity and the lack of prior consent. Guidelines have been established to ensure the ethical use of donated bodies in anatomical research. These include respect for human life, ethical handling of bodies, and obtaining informed consent for the dissection of donated bodies [16].

Informed consent is a fundamental pillar in the ethics of biomedical research. In the context of morphology, this principle implies that donors express their willingness to donate their bodies for research and teaching during their lifetime or posthumously through the approval of their relatives. However, in many regions, the lack of clear regulations has allowed cadavers to be used without adequate documentation of prior consent, compromising the ethics of this research [17].

In addition, there are challenges in educating the population about body donation, which reduces the number of donors and forces them to resort to other, less regulated sources. Transparency in donation processes and the implementation of rigorous records and controls are essential measures to strengthen ethics in this area. Donor confidentiality and anonymity are also crucial aspects of research involving human remains. In this regard, the International Federation of Associations of Anatomists has issued recommendations regarding the donation and use of human bodies, emphasizing the importance of informed consent and respect for donors [16], [18].

### Cultural challenges and considerations

Despite advances in ethical standards, challenges remain, especially in cultural and religious contexts. Ethical practices in anatomy can vary significantly between different societies, which may lead to broad ethical assumptions that do not apply universally. Ethical

standards must consider these differences to avoid cultural biases and encourage constructive ethical debate [15].

### Guidelines for anatomical research

Checklists, such as the Anatomical Quality Assurance Checklist (AQUA), have recently been developed to improve the quality and clarity of reporting of anatomical research, including ethical aspects. These guidelines aim to ensure that anatomical studies comply with ethical standards and promote transparency in the collection and use of specimens [19]. In addition, international standards for research on human remains have been established [20].

Ethics in anatomical research are a constantly evolving field that requires a careful and respectful approach toward donors and their families. Through clear guidelines and a deep understanding of cultural considerations, the anatomical community can move toward more ethical and responsible practices [21], [22].

## IV. ETHICAL DILEMMAS IN MORPHOLOGICAL RESEARCH

### Experimentation on cadavers without consent

One of the most debated ethical dilemmas in morphological research is the use of cadavers without proper informed consent. In many institutions, bodies used in teaching and research come from unclaimed individuals in morgues, raising questions about the legitimacy of their use without express authorization. The lack of well-defined and consistent regulations at the international level has allowed the use of human remains in some contexts without considering the wishes of the individual or their relatives, which conflicts with the bioethical principles of autonomy and respect for human dignity [23].

### Limits of anatomical handling

Handling bodies in amphitheaters and morphology laboratories must respect ethical and cultural limits. Although dissection is an established practice in medical education, some invasive or experimental techniques may be inappropriate without adequate regulation. Furthermore, in several countries, religious and sociocultural norms influence the treatment of human remains, making it essential to consider them to avoid violating the sensitivity of specific communities and groups [24].

## V. DISCUSSION AND CONCLUSIONS

Morphological research has evolved significantly in regulation and ethical standards; however, ongoing challenges require attention to ensure respect for human dignity and compliance with fundamental bioethical principles. The lack of well-defined guidelines in specific environments has led to gaps in implementing principles such as informed consent, transparency in acquiring and using biological specimens, and confidentiality of anatomical data.

It is essential to reinforce the implementation of informed consent in those cases where it is necessary, especially when anatomical handling goes beyond simple observation or measurement. Although the use of unclaimed corpses in forensic morgues remains common in many countries, it is advisable to establish more precise regulations to differentiate between investigations requiring invasive intervention and those involving only morphometric studies or superficial analysis. In the latter case, where no modifications or sample collections occur, a different regulatory approach could apply compared to investigations that affect the integrity of the cadavers.

Furthermore, we should strengthen education on body donation and increase support for voluntary donation programs. The lack of donors forces many institutions to rely on unclaimed bodies, raising ethical dilemmas regarding consent and respect for the deceased's intentions. Implementing donor registries and spreading information about the importance of ethical donation can help mitigate this problem.

On the other hand, the scientific community must promote the transparent publication of ethical procedures adopted in morphological research. Many studies published in this field do not mention the approval of an ethics committee or the regulations that govern them.

Including this information in studies would help strengthen scientific integrity and trust in research (Table 1).

TABLE 1. MAIN ETHICAL GAPS IDENTIFIED IN MORPHOLOGICAL RESEARCH

| Ethical Category | Observed Gap | Implication |
|---|---|---|
| **Informed consent** | Lack of clear guidelines for morphological studies using cadaveric tissues. | Risk of violating the principle of autonomy in the use of postmortem human material. |
| **Body donation** | Absence of detailed and consistent regulation on body donation for research purposes. | Difficulty ensuring that cadaver use complies with ethical and legal standards. |
| **Specific regulation in Colombia** | No specific legal framework exists for morphological research involving cadavers. | Lack of clear guidelines for researchers and ethics committees. |
| **Protection of vulnerable populations** | Unclear criteria when the donor's identity or condition is unknown. | Potential misuse of bodies without proper representation or valid consent. |
| **Role of ethics committees** | Limited clarity on the scope of their review in studies involving postmortem tissues. | Uneven evaluations across institutions and lack of unified criteria. |

Source: Authors

Finally, it is recommended to implement international guidelines to harmonize bioethical principles in morphological research globally. These guidelines can serve as a reference framework for developing local regulations adapted to each cultural and legal context

## FUNDING

This study received no funding.

## CRediT AUTHORSHIP CONTRIBUTION STATEMENT

**J. Díaz-Vallejo:** conceptualization, research, methodology, writing-original draft, writing-revision and editing. **J. Duque-Parra:** conceptualization, research, methodology, writing-original draft, writing-revision and editing. **C. Gonzalez-Correa:** conceptualization, research, methodology, writing-original draft, writing-revision and editing. **J. Duque-Colorado:** research, methodology, data analysis, writing-original draft, writing-revision and editing.

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