



The Historical Milestones of Bioethics in the Construction of Scientific Knowledge

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Opinion

The construction of scientific knowledge reveals theories and methodologies that have been perfected over time, creating milestones that contribute to human evolution. However, in the process of knowledge construction, human beings have not always been considered as participants in scientific research, but rather as objects of experimentation.

In 1722 the prison population in Boston, in the United States, was subjected to scientific experiments on the smallpox vaccine, as the city suffered from an epidemic that killed 8% of the population. As part of his research, physician Zabdiel Boylston, inspired by the experience of an enslaved man who reported being inoculated in Africa, used the method of inoculation, introducing the purulent secretions of an infected human being into the skin of a healthy person to test the prevention of the disease. The doctor inoculated this smallpox virus-contaminated material into the inmates of the Boston jail, offering them freedom in exchange for inoculation. The six inmates who agreed to participate in the research survived and were released demonstrating that the inoculation was effective, on the other hand, the experiment-initiated discussions regarding the ethical questions regarding the consent and coercion of the participants [1].

It is important to highlight that at that time, vulnerable populations were used for research on human beings, serving as an object of experiment for the treatment of numerous diseases. In 1931, Germany began to discuss the basic principles of regulation for the development of research on human beings. Paradoxically, in that same country, during World War II (1939 to 1945), the Germans used science as

a backdrop for experiments on humans testing the use of chemical and bacteriological drugs and weapons, as well as reactions to extreme cold and high atmospheric pressure. Similar experiments were also recorded in Japan by the Imperial Japanese Army that caused thousands of deaths from cholera and typhoid fever.

In 1932, the Tuskegee study demonstrated the inadequacy of a research protocol bringing the discussion of the ethical aspects of research on human beings, since the participants did not consent and had no knowledge about the disease (syphilis) and with the discovery of penicillin in the course of the study, the participants were deprived of treatment. This study was carried out by the Public Health Service of the United States and represented a long period of research between 1932 and 1972 involving 399 poor, illiterate black men infected with syphilis and as a control group 201 healthy men.

The study aimed to describe the natural evolution of syphilis without treatment, and even after the discovery of an effective cure with the advent of penicillin, infected men were not treated. They were deceived with the promise of free medical treatment, meals, and funeral insurance, which caused great damage to the health and lives of those involved and their families. Of the total number of men infected in the study, 28 died of syphilis, 100 died from complications related to the disease, 40 women were infected, and 19 children were born with congenital syphilis.

In 1972, the study was denounced by Peter Buxton, generating a public scandal and culminating in a lawsuit that resulted in compensation for the survivors and their descendants. This study is considered one of the most serious cases of violation of medical ethics and human rights in the history of scientific research [2]. From this case, the

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scientific community sought to develop stricter norms to protect participants in research involving human beings and marked the emergence of bioethics, a term coined by Van Rensselaer Potter, as a field of study.

Important works established bioethics as the science focused on the well-being of species and respect for people, creating a bridge between the cultures of science and humanity. The main works are the Encyclopedia of Bioethics (1978) and the Belmont report, which pointed out 3 principles to be observed in research: respect, beneficence and justice. The book Principles of Biomedical Ethics (1979) expanded the principles: autonomy, beneficence, non-maleficence, and justice [3].

In 2005, the United Nations Educational, Scientific and Cultural Organization (UNESCO) published the Universal Declaration on Bioethics and Human Rights based on 15 principles:

- Human dignity and human rights;
- Benefit and harm;
- Autonomy and individual responsibility;
- Assent;
- Individuals without the capacity to consent;
- Respect for human vulnerability and individual integrity;
- Privacy and confidentiality;
- Equality, justice and equity;
- Non-discrimination and non-stigmatization;
- Respect for cultural diversity and pluralism;
- Solidarity and cooperation;

- Social responsibility and health;
- Benefit sharing and
- Protection of future generations.

These principles are based on human dignity, human rights and fundamental freedoms and represent the fundamental pillars for respect for human beings as participants in scientific research, allowing their participation and guaranteeing their rights [4]. The construction of scientific knowledge is important for the development of humanity in several areas of knowledge, especially in clinical applications, but in today's world it is not possible to admit that research involving human beings disrespects the principles of bioethics.

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