



Humanizing technology: the role of ethics, bioethics and the STS approach in the nursing care process

Humanizar la tecnología: el papel de la ética, la bioética y el enfoque CTS en el proceso de atención de enfermería

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ABSTRACT

Humankind's capacity to transform the environment has modified everyone's way of life and far surpassed inherited dependencies on nature. Science, linked to knowledge, has led to transformations in its evolution, undergoing a process of differentiation and constituting "that form of technology structurally based on the existence of science." The nursing care process is the application of the scientific method to nursing practice, allowing for the provision of care in a rational, logical, and systematic manner, which is of vital importance when working in the emergency setting. The four bioethical principles defined by Beauchamp and Childress (beneficence, non-maleficence, autonomy, and justice) provide an analytical framework that allows for the selection, in a specific situation, of the most relevant elements to establish a criterion or resolve a practical difficulty in order to provide quality care and ensure patient safety within the nursing context. The aim of this work is to establish the relationship between ethical and bioethical principles and the Science, Technology, and Society (STS) approach in the nursing care process.

Keywords: Ethics; Bioethics; Science; Technology; Society; Nursing Care Process.

RESUMEN

La capacidad del hombre de transformar el medio en que vive ha modificado la forma de vida de todos y superado con creces las dependencias heredadas con respecto a la naturaleza. La ciencia ligada al saber ha conllevado a transformaciones en su evolución, ha sufrido un proceso de diferenciación constituyendo: "aquella forma de la técnica que se basa estructuralmente en la existencia de la ciencia". El proceso de atención de enfermería es la aplicación del método científico en la práctica asistencial de enfermería, lo que permite prestar cuidados de una forma racional, lógica y sistemática, lo que resulta de vital importancia cuando se trabaja en el ámbito de las urgencias. Los cuatro principios de bioética definidos por Beauchamp y Childress (beneficencia, no maleficencia, autonomía y justicia) proporcionan un esquema de análisis que permite seleccionar, ante una situación concreta, los elementos más pertinentes para encontrar un criterio o resolver, una dificultad práctica con el fin de proporcionar una asistencia de calidad y velar por la seguridad del paciente en el ámbito de enfermería. El objetivo de este trabajo está orientado a fundamentar la relación entre los principios éticos-bioéticos y el enfoque Ciencia, Tecnología y Sociedad en el proceso de atención de enfermería.

Palabras clave: Ética; Bioética; Ciencia; Tecnología; Sociedad; Proceso de Atención de Enfermería.

INTRODUCTION

The human capacity to transform the environment in which they live has changed everyone's way of life and has far surpassed inherited dependencies on nature. This has led to the accelerated implementation of knowledge not only of technology but also of philosophical and ethical principles to achieve an interaction that consolidates the relationship between healthcare professionals, patients, their families, and the community.

Thus, the development of research in all its fields has enabled the formation and consolidation of human transformative capacity at a global level, something that was considered unthinkable just a century ago. ⁽¹⁾

Thus it is known that the influence of science in general, without exclusions, has been complex and has achieved the liberation of unchangeable behaviors, mainly in the last 100 years, directly or indirectly affecting the standard of living of the population.

Thus, the work of nurses is at the center of attention of all health professionals, in Cuba and the world, through the nursing care process (PAE).

The nursing profession, in recent decades, has abandoned the dogmatism of isolated compliance with medical indications to ascend to a higher level in comprehensive patient care, from bioethics and its relationship with ethical principles.

Therefore, current science has abandoned the linear framework of a laboratory or a specialized institution and has become an active social force that decisively influences all aspects of life in society in all its dimensions ⁽²⁾, where nursing work has expanded its horizons beyond the hospital cloister to assist patients in a broader framework such as society itself.

In Cuba, the Ministry of Public Health is the governing body of the National Health System (SNS), responsible for directing, executing, and controlling the application of State and Government policy regarding Public Health and the development of Medical Sciences.

Furthermore, it is known that social needs will determine the development of science; and in the field of medical sciences, specifically in nursing practice, it will be conditioned by the needs of patients, families, and the community in a complex interaction under ethical principles in an intrinsic relationship with bioethics.

Thus, the application of these principles will be associated with vital aspects of the health-disease process, such as trust, understanding, compliance with medical instructions by the nursing staff, as well as adherence to the prescribed treatment.

The nursing care process (NCP) is the method that guides the professional, scientific, systematic, and humanistic work of nursing practice, focused on simultaneously evaluating the advances and changes in the improvement of a state of well-being of the person, family, and/or group based on the care provided by the nurse. It is the path that ensures high-quality care for the person who needs health care that allows them to achieve recovery, maintenance, and progress of health. ⁽¹⁾

As historical background, note that the PAE has its origins when it was considered a process in 1955, thanks to Hall, later joined by other theorists such as Johnson in 1959, Orlando in 1961, and Wiedenbach in 1963. It consisted of a three-stage process: assessment, planning, and implementation. Yura and Walsh in 1967 established four stages: assessment, planning, implementation, and evaluation.

The diagnostic stage was included between 1974 and 1976 by Bloch, Roy and Aspinall, leaving since then the PAE as it is currently known: assessment, diagnosis, planning, execution and evaluation. ⁽²⁾

The process is characterized by having a purpose, since it is directed towards an objective, it is systematic, dynamic and interactive, flexible, has a theoretical basis, and can be applied to any nursing model.

The relationship between the nurse, patient, family, and community must be humane, therefore trust and respect towards the patient are the result of the knowledge they have of the care they provide, which must be comprehensive and holistic care, based on a trusting relationship between patient, family, and the nurse. However, in recent years some research studies show that the nursing professional has an authoritarian position over the patient and the patient is a passive recipient of care, whose autonomy is limited.

Other studies report that there is dehumanization in nursing care; the patient rates the patient-nurse relationship as asymmetrical, meaning that there is no reciprocity between what the patient receives and what the nurse provides, due to lack of information and weaknesses in the patient-nurse relationship. When a nursing care process is applied with the quality that the scientific method should entail, this contradicts what was expressed above. ⁽³⁾

Since the Hippocratic ethical principle “*primum non nocere*”, patient safety has been a concern. The World Health Organization (WHO), in 2002, issued a resolution to improve patient safety, which materialized in 2004 with the establishment of the World Alliance for Patient Safety as a public health priority.

Subsequently, in 2006, the Council of Europe urged countries to develop policies, strategies, and programs to improve patient safety in their healthcare organizations. In June 2009, the Council of the European Union launched the “Council Recommendations on patient safety, including the prevention and control of healthcare-associated infections.” (3)

Therefore, nursing care comprises a series of procedures and techniques that require special caution, not only due to the intrinsic risk that some of them pose to patient safety but also because of their volume and scope at all care levels (4). Hence, they must be addressed considering the bioethical commitment based on respect for the ethical principles that underpin the task of caring. Therefore, it is important to elucidate, understand, and explain the bioethical duties of nursing regarding patient safety. (4)

The nursing profession requires means, including bioethical principles and moral values (habits, virtues, qualities) that guide appropriate behaviors and actions when providing care. (5)

Although studies exist and the value of their contributions is appreciated, students in the day course and nursing professionals in practice do not relate bioethical principles to the nursing care process, and informed consent is violated without prior explanation of the procedure to be performed.

The reflections made provide reasons to emphasize the need and purpose of solving the following scientific problem: How to establish the relationship between bioethical principles and the nursing care process?

The objective of this work is to establish the relationship between ethical-bioethical principles and the Science, Technology and Society approach in the nursing care process.

METHODS

The present work adopts a qualitative approach of integrative review and conceptual analysis, framed within the perspective of Science, Technology and Society (CTS) studies. The analysis materials include a review of foundational theoretical literature in bioethics, scientific articles indexed in databases such as PubMed and Scielo, and analysis of paradigmatic clinical cases that illustrate tensions between bioethical principles and the use of technology across the different phases of the Nursing Care Process.

The following research methods were considered:

Analytical-synthetic: to study each principle separately in a technological context, examine each phase of the PAE in isolation, identify specific technologies in each phase, and analyze the CTS dimension.

Non-participant observation: to observe the use of technology by nursing staff while attending to the patient.

Systemic-structural analysis: to study the “nursing-technology-patient” system as a whole with interrelated and emergent parts.

DEVELOPMENT

In the last decade of this century, the development of science has reached a magnitude unparalleled by any other period in human history; science has ceased to be exclusive to closed social groups and has turned towards all of humanity in all areas of knowledge. (6,7)

Hence, numerous definitions of science have been proposed, but as expected, this is a complex and dynamic process.

Thus, according to Jover, science can be defined as: “opposition to technique, according to the different functions they perform, (...) the function of science is linked to the acquisition of knowledge, to the process of knowing, whose most traditional ideal is truth, particularly true scientific theory. Objectivity and rigor are attributes of that knowledge.” (8)

The author himself points out the different manifestations of science, as well as the profound changes experienced in its development, and agrees that it is difficult to establish a brief and precise definition of what is understood as science, since it can be analyzed as a system of knowledge that modifies our vision of the real world and enriches the imagination.

It can be understood as the research process that allows obtaining new knowledge, which in turn offers new possibilities for manipulating phenomena.

It is possible to consider its practical and productive impacts, characterizing it as a productive force that fosters the transformation of the world and is a source of wealth; science also presents itself as a duly institutionalized profession with its own culture and well-identified social functions, and it also suggests that the reason why so many different facets of science can be appreciated is that it constitutes a complex phenomenon whose historical expressions have varied considerably. (9)

Additionally, it describes the characteristics of science as:

Permeated with interests in application for economic purposes, which has implications for scientific activity, the lives of scientists, the institutions that host them, and their relationships with psychology.

Psychology and business ideology are present in the world of science. Constant ethical concern.

Most of the scientific and technological capacity is found in a small group of industrialized countries. It is said that world science is even more concentrated than world wealth. (9)

On the other hand, according to Króber,⁹ "We understand science not only as a system of concepts, propositions, theories, and hypotheses, but also, simultaneously, as a specific form of social activity aimed at the production, distribution, and application of knowledge about the objective laws of nature and society; moreover, science presents itself as a social institution, as a system of scientific organizations whose structures and development are closely linked to the economy, politics, cultural phenomena, and the needs and possibilities of the given society."

Thus, this concept of science can be summarized as:

1. System of knowledge that modifies the real world and enriches our imagination and our culture.

2. Research process that allows obtaining new knowledge, which in turn offers greater possibilities for manipulating phenomena.

3- A productive force that promotes the transformation of the world and is a source of wealth.

4- A profession duly institutionalized, a bearer of its own culture, and with well-identified social functions." (9)

Likewise, another author, Bernal, states: "In reality, the nature of science has changed so much over the course of human history that a definition of it could not be established." In his controversy with Dingle, he characterized it as "what scientists do." (10)

Although during the debate he concluded that a comprehensive list of the characteristics that typify the phenomenon in question was far more useful than a brief formulation, he explained that science should be understood as: an institution, a method, a cumulative tradition of knowledge, a principal factor in the maintenance and development of production, and one of the most powerful influences in shaping opinions about the universe and humankind. This is a broad approach that allows for a rich and diverse understanding of the phenomenon of science, open, above all, to what he considered essential: "studying its history and social context." (11)

For all this, it is possible to point out that science linked to knowledge has led to transformations in its evolution, has undergone a process of differentiation constituting: "that form of technique that is structurally based on the existence of science".

For its part, technology, unlike science, "is a set of scientific and empirical knowledge, skills, experiences, and organization required to produce, distribute, and use goods and services. It therefore includes theoretical and practical knowledge, physical means, productive, managerial, and organizational methods and procedures, among others; identification and assimilation of previous successes and failures, capabilities and skills of human resources, etc." (11)

It is then that the function of science is related to the acquisition of knowledge, the process of knowing with truth as its traditional ideal. On the other hand, the function of technique is linked to the execution of procedures in doing, whose ideal is utility. Technique refers to useful operational procedures from a practical point of view to determine the ends; it is a know-how, without necessarily requiring a know-why.

The term Technoscience constitutes a linguistic resource to denote the intimate connection between science and technology and the blurring of their boundaries. This does not necessarily imply nullifying the identities of science and technology, but it does warn that research on them and the practical policies implemented regarding them must start from the type of connection that the word technoscience seeks to emphasize. (2)

Therefore, it is essential to understand that current scientific and technological activity implicitly has a technoscientific nature, and it can be approached from numerous examples that are increasing with each scientific discovery in any area of knowledge, such as the application of the PAE as a scientific method in the clinical practice of nursing professionals, without which it would be ineffective today. (10)

For its part, in cultural and environmental terms, the popularization of science and technology reinforces the fundamental skills of the population and increases their participation in decision-making, thus contributing to democratic stability and sustainable development.

This also helps reinforce the satisfaction of personal needs and self-esteem in the population. With the growing importance that science and technology have acquired in all areas of social life, their popularization is becoming an important strategic factor. (12)

Nursing, for its part, as an activity within the medical sciences, of extreme complexity, intensive research, and technological innovation that has transformed the very way of seeing and applying medical principles in the health-disease process, passing through all levels of organization, from the biological, social, philosophical, and community approach.

Health technology is also defined as a set of procedures used in medical care that apply acquired scientific knowledge, with a scientifically grounded strategy and a clinical-epidemiological-social and ecological approach, with the aim of improving the health status of the population through sustainable technology, and with the aspiration to increase the quality of life of the people and create a state of full well-being (13), and it constitutes the most evident example of the interrelationship between science and technology.

The advances that humanity has developed in science, technology, medical and genetic treatments, during the last two decades of the previous century and the present, have opened a gap between ethical, legal, and human values and the very evolution of humanity, especially in the professional nursing career because it carries a set of values together with regulations that may perhaps cause contradictions.

The professional performance of nursing is not free from this situation, since they are the people who remain directly in contact with their real and potential needs. (3)

Similarly, the nursing professional is part of the research, teaching, and administration team, making the regulated advancement of science their commitment to humanity, life, and the environment, that is, to everything, always applying the scientific method PAE.

Ethics and bioethics lead the nursing professional to go beyond the various fields, whether practical or theoretical, and it is there that they unify the ethical code, also incorporating the practice acquired during the career, in order for the nurse to face various problems.

The vocation of nursing is above all a humanitarian work. This conception is of vital importance in the social practice of a profession that comprises a system of values and the pursuit of knowledge that define the way of thinking and acting of the nursing professional. (1)

The basic principles of ethics in nursing stem from its humanism. Nursing ethics is based on the perception of morality, the practice of honesty, justice, solidarity, good practices, and competencies. In turn, it regulates the duties of the profession within the scope of its daily tasks. (9)

A transdisciplinary ethics that focuses on the human being is necessary, integrating knowledge from various disciplines (science, technology and society approach) for therapeutic decision-making, which directly includes nursing care. (14).

Bioethical principles are part of the comprehensive education of individuals, which must be incorporated into daily practice, in order to respect the rights of users who must be treated with humanization and respect, therefore an assessment of the efficiency and effectiveness of professional nursing practice is required in the care and application of scientific and technical knowledge and, essentially, in the warmth, compliance, charity, and empathy that are put into service when relating to the patient and their family. Applying bioethical principles to achieve the outcome desired by the user. (10).

Therefore, the principles of bioethics defined by Beauchamp and Childress (beneficence, non-maleficence, autonomy, and justice) provide an analytical framework that allows selecting, in a specific situation, the most pertinent elements to find a criterion or resolve a practical difficulty in order to provide quality care and ensure patient safety in the nursing field. (10).

The application of these principles in quality of care is crucial to ensure safe and effective care, promoting an empathetic and respectful relationship between the professional and the patient. (15) Therefore, it is important to conduct an analysis of the bioethical principles related to the nursing profession.

First, the principle of beneficence is the moral obligation that every human being has to do good to others.

With respect to nursing practice, it means doing good in each and every action performed by the nursing professional. For this, it is necessary that they are motivated and committed to their work. (16)

The nursing professional applies the principle of beneficence from the moment they care about and dedicate time to maintain adequate professional performance and professional competencies that allow them to provide quality care to the patient and promote a culture of patient safety. That is, when they adapt to the patient's needs, establishing nursing diagnoses, providing appropriate care and, for example, adhering to established medication schedules and not opting for their own comfort. (17)

Second, the principle of non-maleficence is based on the Hippocratic principle "Primum non nocere," that is, first do no harm to the patient. To this end, in nursing practice, deliberate harm to the patient must be avoided during the performance of nursing techniques. Therefore, nursing care should be aimed at respecting the physical, social, and psychological integrity of the patient. (18)

In summary, nursing care must be exercised based on respect for human dignity through compassion, responsibility, justice, autonomy, care for interrelations, and considering universal solidarity, that is, that actions benefit all patients equally. Subjects of care, caregivers exercising a post-conventional level of moral development based on an ethical commitment to provide patient safety and quality care. (19)

Thirdly, autonomy, according to Guillon, is defined as "capacity to think, decide, and act based on reasoning and decisions made freely and independently, without influences or impediments." For Beauchamp and Childress, autonomous action has 3 characteristics: intentionality, knowledge, and absence of constraint. (3)

It must not be forgotten that the center of nursing care is the patient and their well-being. In nursing, to promote the principle of autonomy, adequate and understandable information must be provided based on the patient's cultural level when performing any care or technique. Providing information involves using understandable language, knowing how to listen, and having empathy with the patient by understanding their situation, desires, and expectations of their health process. Nor should it be forgotten that the information provided must be truthful and tailored to the patient's own demand. (12,13)

Thus, by correctly transmitting the information, the patient, based on their convictions, will be able to elaborate their reasoning and adopt the most convenient decision, making use of their autonomy during the care process that conditions their health. (13,14)

Lastly, the principle of justice, within the framework of healthcare, generally refers to what philosophers call "distributive justice," that is, all human beings have the same rights, regardless of their physical or mental development and integrity; and regardless of their racial, social, political, economic, or religious conditions. (15-17)

The patient is treated unfairly when they are not included in decision-making regarding their health process, since they are not allowed to exercise their autonomy. Also when they are not told the truth regarding their care. On the other hand, regarding the nursing profession, one acts based on the principle of justice when treatment is provided effectively, taking into account the urgency or needs of the patient. Also when the patient's needs are prioritized to satisfy them or patient care is prioritized before performing administrative procedures. (15-17)

Bioethics is the term postulated by the biochemical oncologist Van Rensselaer Potter in 1971, regarding the conflicts arising from the vertiginous advances of science and technology that were occurring especially in biology and medicine and that later extended to other areas of knowledge.

Bioethics is a young discipline of philosophy, within the field of ethics, with barely 20 years of existence, but with great application today. The principles of bioethics in nursing are based on the satisfaction of human needs and the aspects that affect it. It becomes a set of actions and principles whose purpose is to provide care to the sick and healthy person, the family, and the community.

Bioethics is understood as a discipline with an inter, multi and transdisciplinary approach, which regulates human interventions according to moral values focused on preserving human dignity, the fundamental rights of individuals and the environment; without this meaning being against science or technology, but rather aiming for responsible management.

Bioethics includes, in addition to moral dimensions, political decisions about the life sciences and health care. Consequently, the Universal Declaration on Bioethics and Human Rights calls for promoting education in bioethics, especially among young university students, based on the understanding that we are all involved in the education and dissemination of the subject, since it is not a minor matter due to the bioethical problems that often arise; likewise, it makes pedagogical proposals, such as the creation of programs for teachers, study materials, and practical cases on which to discern.

The concept of “patient safety,” understood as the structure, processes, instruments, and methodologies based on scientific evidence, aims to coordinate efforts to reduce the risk of experiencing preventable harm in the healthcare process or to mitigate its consequences. (18) As the person is the focal point of nursing care, professionals must be aware that an ethical dimension must be addressed in practice.

The nursing profession requires means, including bioethical principles and moral values (e.g., habits, virtues, qualities), to guide appropriate behaviors and actions in providing care. (19)

Through the correct application of ethical and bioethical principles to the nursing care process, professionals in the specialty demonstrate competencies and skills that are reflected in the quality of services. On the other hand, patients, family, and community demonstrate satisfaction with their health needs.

CONCLUSIONS

The integration of bioethical principles is a dynamic and contextual process, and its link with the nursing care process enhances the quality of health services provided by nursing professionals. The nursing care process requires constant ethical reflection in its application and is aimed at the satisfaction of the patient, family, and community through the application of science and technology.

It is imperative to promote ethical training, implement policies based on these principles, improve data accessibility, encourage active patient participation, and carry out periodic monitoring and evaluation of the actions implemented.

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The authors declare that there is no conflict of interest.

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