International Journal of Medical Science and Dental Research

Ethical Issues in Human Embryonic Stem Cell Research: A Christian Perspective

Dr. Victor Ifeanyi Ede[1] and *Emmanuel Ifeanyi Obeagu[2]

1. *School of General Studies, Michael Okpara University of Agriculture, Umudike, Abia State Nigeria*
2.
3. *Diagnostic Laboratory Unit, Department of University Health Services, Michael Okpara University of Agriculture, Umudike, Abia State Nigeria*

Abstract: *Embryonic stem cell research is one of the biomedical researches that have generated ethical controversies in recent time. The aim of this paper is to analyze the ethical issues in embryonic stem cell research, from the stand point of Christianity. Embryonic stem cell research involves the harvesting of human embryos for the purpose of research and therapeutic uses. This novel area of biomedical research holds great promise for understanding basic mechanisms of human development and differentiation, as well as the hope for new treatments for degenerative diseases. Findings of the study show that the ethical consideration in embryonic stem cell research arises as a result of the destruction of the embryo in the process. Secular biomedical researchers ignore the human status of the embryo and therefore do not see any moral problem with the destruction of the embryos. Christians on the other hand view the embryo as a human being in the early developmental stage, and therefore do not support the destruction of the embryo for the purpose of research. Based on the findings of the study, some recommendations were made which include; the need to harness spiritual healing methods to cure diseases, and the need for firmness and boldness among Christians in rejecting the practice. Future generations of unborn children will be preserved if the Christian principle of sanctity of life is maintained, even for embryos.*

Keywords*: Stem cell, Embryo, Ethics, Christianity*.

I. Introduction

Human beings get into the world through the process of reproduction. This starts with the fertilization process through which the human embryo is formed. The development of scientific and biomedical researches has led to the evolution of new fields in medicine. Stem cell research happens to be one of the relatively new areas of medical researches that hold great promise. The successful creation of human embryonic stem cells in 1988 opened the door to an important new area of biomedical research.[1] In November of 1998, scientists reported that they had successfully isolated and cultured human embryonic stem cells, a feat which had eluded researchers for almost two decades.

However, some scientific and medical advances usually raise ethical questions. It has been observed throughout human history, technological advances have emerged as issues of controversy for both scientific and religious

[1] Walters, LeRoy. "Human Embryonic Stem Cell Research: An Intercultural Perspective." *Kenedy Institute of Ethics Journal* 14 (2004) p. 3.

communities.[2] The current stem cell research is not an exception, as it has generated ethical controversies. The announcement of the use of human embryonic stem cell for research kicked off an intense and unrelenting debate between those who approve of embryonic stem cell research and those who are opposed to it. Some of the most prominent advocates of the research are scientists and patients who believe that embryonic stem cell research will lead to the development of treatments and cures for some of humanity's most pernicious afflictions (such as Alzheimer's disease, Parkinson's disease, heart disease, and diabetes). Among the most vocal opponents of the research are those who share the desire to heal, but who object to the pursuit of healing via unethical means. Christians happens to be among the opponents of this new trend in biomedical research. As stem cell research gains ground in different parts of the world including Nigeria, this paper aims at analyzing the ethical issues in embryonic stem cell research, from the stand point of Christianity.

II. Clarification of Concepts

Stem Cell: Cells have been described as "the building blocks of the body".[3] Stem cells are the simplest of cells that have the ability to transform into any required cell required for the proper functioning of any particular organ of the human body. They are specialized cells that can produce several different kinds of cells in the body.[4] Stem cells have the remarkable potential to develop into many different cell types in the body during early life and growth. In addition, in many tissues they serve as a sort of internal repair system, dividing essentially without limit to replenish other cells as long as the person or animal is still alive. When a stem cell divides, each new cell has the potential either to remain a stem cell or become another type of cell with a more specialized function, such as a muscle cell, a red blood cell, or a brain cell. Stem cells are distinguished from other cell types by two important characteristics. First, they are unspecialized cells capable of renewing themselves through cell division, sometimes after long periods of inactivity. Second, under certain physiologic or experimental conditions, they can be induced to become tissue- or organ-specific cells with special functions. In some organs, such as the gut and bone marrow, stem cells regularly divide to repair and replace worn out or damaged tissues. In other organs, however, such as the pancreas and the heart, stem cells only divide under special conditions.

Embryo: An embryo has been defined as "the developing human during its early stages of development".[5] In prenatal human development, the embryonic period starts from the end of two weeks and extends to the end of the second month, by which time the development of all major structures take place.[6] Human embryonic stem cells are the cells from which all kinds of tissue in the human body originate. Typically, they are derived from human embryos; often those from fertility clinics who are left over from assisted reproduction attempts (e.g., in vitro fertilization). When stem cells are obtained from living human embryos, the harvesting of such cells necessitates destruction of the embryos.

Ethics: Ethics and ethical are often used synonymously with morals and morality; and they connote customs, habits and accepted ways of behaviour of an individual or community. It is concerned with the question of right and wrong in human behaviour. Ethics has been defined as;

---

[2] Mannoia, Kristyn A. "An Evaluation of three Religious Perspectives on Stem Cell Research." *Perspectives on Science and Christian Faith* 56 (2004) p. 216.

[3] Weir, J. Emmette. "Evaluation of Stem Cell Research and Therapy from the Perspective of Christian Ethics." 2013. p. 1.

[4] Bohlin, Ray. "The Continuining Controversy over Stem Cells: A Christian View." *https://probe.org/the-continuing-controversy-over-stem-cell/*. 2017. p. 1.

[5] Keith L. Moore & T. V. N. Persaud. *The Developing Human: Clinically oriented Embryology.* Philadelphia: Saunders, 2003.

[6] Dom. U. Ngwoke & Uche N. Eze. *Developmental Psychology and Education: Theories, Issues and Trends.* Enugu: Magnet Business Enterprises, 2004. p. 86.

> The science of morality; morality being understood as the set of judgements people make regarding what is right or wrong, good or bad, in the relations within or between individual or collective centres of intelligence and will.[7]

Unique Properties of Stem Cells

Stem cells differ from other kinds of cells in the body. All stem cells, regardless of their source, have three general properties, namely: they are capable of dividing and renewing themselves for long periods; they are unspecialized; and they can give rise to specialized cell types.[8]

Stem cells are capable of dividing and renewing themselves for long periods: Unlike muscle cells, blood cells, or nerve cells, which do not normally replicate themselves, stem cells may replicate many times, or proliferate. A starting population of stem cells that proliferates for many months in the laboratory can yield millions of cells. If the resulting cells continue to be unspecialized, like the parent stem cells, the cells are said to be capable of long-term self-renewal. Scientists are trying to understand two fundamental properties of stem cells that relate to their long-term self-renewal:

a. Why can embryonic stem cells proliferate for a year or more in the laboratory without differentiating, but most adult stem cells cannot; and
b. What are the factors in living organisms that normally regulate stem cell proliferation and self-renewal?

Discovering the answers to these questions may make it possible to understand how cell proliferation is regulated during normal embryonic development or during the abnormal cell division that leads to cancer. Such information would also enable scientists to grow embryonic and non-embryonic stem cells more efficiently in the laboratory. The specific factors and conditions that allow stem cells to remain unspecialized are of great interest to scientists. It has taken scientists many years of trial and error to learn to derive and maintain stem cells in the laboratory without them spontaneously differentiating into specific cell types.

Stem cells are unspecialized: One of the fundamental properties of a stem cell is that it does not have any tissue-specific structures that allow it to perform specialized functions. For example, a stem cell cannot work with its neighbors to pump blood through the body (like a heart muscle cell), and it cannot carry oxygen molecules through the bloodstream (like a red blood cell). However, unspecialized stem cells can give rise to specialized cells, including heart muscle cells, blood cells, or nerve cells.

Stem cells can give rise to specialized cells: When unspecialized stem cells give rise to specialized cells, the process is called differentiation. While differentiating, the cell usually goes through several stages, becoming more specialized at each step. Scientists are just beginning to understand the signals inside and outside cells that trigger each step of the differentiation process. The internal signals are controlled by a cell's genes, which are interspersed across long strands of DNA and carry coded instructions for all cellular structures and functions. The external signals for cell differentiation include chemicals secreted by other cells, physical contact with neighboring cells, and certain molecules in the microenvironment. The interaction of signals during differentiation causes the cell's DNA to acquire epigenetic marks that restrict DNA expression in the cell and can be passed on through cell division. Adult stem cells typically generate the cell types of the tissue in which they reside. For example, a blood-forming adult stem cell in the bone marrow normally gives rise to the many types of blood cells. It is generally accepted that a blood-forming cell in the bone marrow, which is called a hematopoietic stem cell, cannot give rise to the cells of a very different tissue, such as nerve cells in the brain.

III. The Human Stem Cell Research

Human stem cell research can be categorized into adult stem cell research and embryonic stem cell research. Adult stem cells as part of the normal healing process are to be found in the human body in abundance, though

[7] Stob, H. *Ethical Reflections.* William B. Eerdmaus Pub. Co., 1978.
[8] "Stem Cell Basics." *https//stemcells.nih.gov/info/basics/2/htm*

the quantity decreases with increase in age.[9] Adult stem cells are found in adult tissues and organs, including the umbilical cord blood or bone marrow.[10] These stem cells can be harvested from one part of the body and used to heal a disease in another part of the body. Adult stem cells (also referred to as "non-embryonic" stem cells) are present in adults, children, infants, placentas, umbilical cords, and cadavers. Obtaining stem cells from these sources does not result in certain harm to a human being. Adult stem cell research has already resulted in numerous instances of actual clinical benefit to patients. For example, patients suffering from a whole host of afflictions; including (but not limited to) Parkinson's disease, autoimmune diseases, stroke, anemia, cancer, immunodeficiency, corneal damage, blood and liver diseases, heart attack, and diabetes, have experienced improved function following administration of therapies derived from adult or umbilical cord blood stem cells. They are used for the treatment of haematological malignancies and to modify the side effects of cancer chemotherapy. They are also being used in clinical trials in patients who have suffered myocardial infarction.[11] Adult stem cells research does not raise much ethical concern since it does not involve the destruction of human life. Researchers and medical experts therefore widely use adult stem cells for therapeutic purposes. However, because these cells cannot be expanded *in vitro*[12] and the range of cell types which they can produce are limited[13], stem cell researchers have resorted to the use of embryonic stem cells. However, the long-held belief that non-embryonic stem cells are less able to differentiate into multiple cell types or be sustained in the laboratory over an extended period of time; rendering them less medically-promising than embryonic stem cells, has been repeatedly challenged by experimental results that have suggested otherwise.[14]

Scientists discovered ways to derive embryonic stem cells from early mouse embryos more than 30 years ago, in 1981. The detailed study of the biology of mouse stem cells led to the discovery, in 1998, of a method to derive stem cells from human embryos and grow the cells in the laboratory. These cells are called human embryonic stem cells. The embryos used in these studies were created for reproductive purposes through *in vitro* fertilization procedures. When they were no longer needed for that purpose, they were donated for research with the informed consent of the donor. The embryonic stem cell research involves the harvesting of human embryos for the purpose of research. Human embryos can be obtained from *in vitro* fertilization (IVF) clinics that have excess embryos in storage, or through a process called somatic cell transfer.[15] They can also be obtained from discarded foetuses from abortion clinics. The process involved in embryonic stem cell research leads to the destruction of the embryo. This raises ethical concern concerning the status and the rights of the embryo. Embryonic stem cell researchers ignore the human status of the embryos. Instead, they perceive the embryos as cell tissues that will enable advancements in research to ultimately better the quality of life in society.[16] Supporters of this research are of the view that the destruction of the embryos has no moral obstacle. For them, the embryo has no moral status. They argue that the human embryos are merely parts of other people's bodies, claiming that the harvesting of the embryo cannot be termed the destruction of a being. According to them, for a being to be destroyed, that being should have an interest that is defeated. They argue that for a being to have an interest, it must have beliefs, desires, expectations, aims and purposes, and that the embryo has none of these.[17] This position is too extreme and cannot be taken on any moral ground. To regard embryo as not having any human property is to deny the fact that the embryo is the early stage of the development of every human being.

The potential benefits of the embryonic stem cell in the treatment of degenerative diseases and furtherance of biomedical research have also made the use of human embryo attractive to biomedical researchers. It has been observed that embryonic stem cell research offers great promise for understanding basic mechanisms of human development and differentiation, as well as the hope for new treatments for diseases such as diabetes, spinal

---

[9] Weir, J. Emmette, 2013. p. 2.
[10] Robin Downey & Rose Geransar. "Stem Cell Research, Publics' and Stakeholder Views." 2008, p. 69.
[11] Bernard Lo & Lindsay Parham. "Ethical Issues in Stem Cell Research." *Endocr. Review* 30, no. 3 (2009) p. 2.
[12] Ibid.
[13] Dusman, Ellie. "An Ethical Dilema in Stem Cell Research." Pittsburgh: University of Pittsburgh, Swanson School of Engineering, October 28, 2014. p. 2.
[14] *www.stemcellresearch.org*
[15] Robin Downey & Rose Geransar. "Stem Cell Research, Publics' and Stakeholder Views." 2008, p. 69.
[16] Dusman, Ellie. p. 2.
[17] Rickard, M. "Key Ethical Issues in Embryonic Stem Cell Research ." *http://www.aph.gov.au/library/pubs/cib/2002-03/03cib05.htm.* 2002.

cord injury, Parkinson's disease and myocardial infarction.[18] Another important potential benefit is in the field of pharmacology. Here, embryonic stem cells can be used to identify new molecular targets for drug therapy and thus facilitate the manufacture of new drugs. Research can as well be directed to test the safety of drugs and to predict their potential toxicity *in vitro* and reduce the need for animal testing in pharmacotoxicology.[19]

IV. Christian Perspective on Embryonic Stem Cell Research

Ethical thinking and decision making are usually guided by people's religious beliefs. Religion influences and shapes people's ethical values. When new ethical issues are on the front burner, different religions take their stands depending on their ethical dispositions. Hence, different religious groups have taken different positions on whether embryonic stem cell research should be accepted or not.

Christianity does not favour embryonic stem cell research and therapy. Christians' rejection of the embryonic stem cell research is anchored on the Christian moral principle of the sanctity and uniqueness of human life. While Christianity advocates the need to protect human life, embryonic stem cell research involves the destruction of the embryo. Christians believe that human life starts at the moment of conception, and a human embryo is a human being at an early stage in development.[20] This Christians belief has been captured thus:

> From the time that the ovum is fertilized, a new life is begun which is neither that of the father nor of the mother; it is rather the life of a new human being with his own growth. It would never be made human if it were not human already. To this perpetual evidence... modern genetic science brings valuable confirmation. It has demonstrated that, from the first instant, the programme is fixed as to what this living being will be: a man, this individual-man with his characteristic aspects already well determined. Right from fertilization is begun the adventure of a human life.[21]

The human embryo is an individual from the moment of fertilization and it has the right to its own life. Destroying the embryo on the account of research is tantamount to murder. The Christian Scripture specifically condemns murder.[22]

Human beings derive their integrity and worth from the fact that they are made in the image of God. The biblical position is that human life begins at conception and human being is the image of God (Gen 1:26). As His image, God watches over human beings even as an embryo. Hence, speaking about God's care for him even as an embryo, the Psalmist said;

> Your eyes looked upon my embryo, and everything was recorded in your book. The days scheduled for my formation were inscribed, even though not one of them had come yet.[23]

God's care for us even during the embryonic stage indicates that we should show the same care for the embryo as well. Hence, we must treat the embryo as a full human with full rights from the moment the sperm and egg combine.[24] J.M. Vorster asserted that;

> As a human being, created and ensouled by God, the embryo is ontologically an object with a moral status. In practical terms, deliberately destroying the human embryo is tantamount to the deliberate destruction of a human being.[25]

The human embryo has the potential of becoming human being and therefore should be accorded the same rights, including right to life, as any human being and not be used as a medical resource and research material. The acceptance of the use of embryonic stem cell for research and therapeutic purposes is obviously in contrast with the teaching of Christian ethics, which respects the human foetus from the very moment of conception.

---

[18] Bernard Lo & Lindsay Parham, 2009, p. 2.

[19] Fadel, Hossam E. "Prospect and Ethics of Stem Cell Research: An Islamic Perspective." *Journal of Islamic Medical Association* 39 (2007) p.

[20] Dusman, Ellie. p. 2.

[21] Kevin D. O'Rourke & Philip J. Boyle. *Medical Ethics: Sources of Catholic Teachings.* USA: George Town University Press, 2011. p. 40.

[22] *The Holy Bible (Revised Standard Version) Exodus 20:13.*

[23] *The Holy Bible (International Standard Version) Psalm 39:16.*

[24] Moore, Peter. *Ethical Debates: Stem Cell Research.* New York: The Rosen Publishing Group, Inc., 2012.

[25] Vorster, J. M. "A Christian ethical perspective on the moral status of the human embryo." *Acta Theologica* 31, no. 1 (2011) p. 22.

V. Recommendations

Having examined the ethical issues regarding embryonic stem cell research from the perspective of Christianity, the following recommendations are necessary:

i. African Christians should make efforts to harness spiritual healing methods for different diseases. This will help to deemphasize the therapeutic use of embryonic stem cells.
ii. African Christians should be firm and bold to reject the infiltration of some Western thoughts that do not respect the sanctity of human life, such as the embryonic stem cell research.
iii. Christian researchers should carry out more researches on the efficacy of herbs and animal tissues in healing diseases as alternative to embryonic stem cell research.
iv. Christens should emphasize the need to protect human embryos to ensure the preservation of future generations.
v. Christians should show love and support to people with degenerative diseases. This will help them live longer.
vi. Christians should lay more emphasis on what will be the condition of the human soul after death.
vii. Christian researchers should intensify efforts at finding out how to preserve the umbilical cord of the newborn or blood from the placenta for further use in the treatment of diseases.

VI. Conclusion

Christian ethical principles oppose the current biomedical research which supports the harvesting and subsequent destruction of the human embryo. Embryonic stem cell researchers do not regard the human embryo as an entity with immortal and eternal prospect, which has the full rights of a human being. The future of humanity will be threatened if embryonic stem cell research is allowed to continue unchecked. This can lead to indiscriminate destruction of future generations unborn. Since human embryonic stem cell research necessitates the destruction of human embryos, it is unethical, regardless of its alleged benefits. Therefore, ethical alternatives for achieving those benefits should be actively pursued.

References

[1.] Bernard Lo & Lindsay Parham. "Ethical Issues in Stem Cell Research." *Endocr. Review* 30, no. 3 (2009): 204-213.

[2.] Bohlin, Ray. "The Continuining Controversy over Stem Cells: A Christian View." *https://probe.org/the-continuing-controversy-over-stem-cell/*. 2017. (accessed March 4, 2018).

[3.] Dom. U. Ngwoke & Uche N. Eze. *Developmental Psychology and Education: Theories, Issues and Trends.* Enugu: Magnet Business Enterprises, 2004.

[4.] Dusman, Ellie. "An Ethical Dilema in Stem Cell Research." Pittsburgh: University of Pittsburgh, Swanson School of Engineering, October 28, 2014.

[5.] Fadel, Hassan E. "Prospect and Ethics of Stem Cell Research: An Islamic Perspective." *Journal of Islamic Medical Association* 39 (2007): 73-83.

[6.] Keith L. Moore & T. V. N. Persaud. *The Developing Human: Clinically oriented Embryology.* Philadelphia: Saunders, 2003.

[7.] Kevin D. O'Rourke & Philip J. Boyle. *Medical Ethics: Sources of Catholic Teachings.* USA: George Town University Press, 2011.

[8.] Mannoia, Kristyn A. "An Evaluation of three Religious Perspectives on Stem Cell Research." *Perspectives on Science and Christian Faith* 56 (2004): 216-225.

[9.] Moore, Peter. *Ethical Debates: Stem Cell Research.* New York: The Rosen Publishing Group, Inc., 2012.

[10.] Rickard, M. "Key Ethical Issues in Embryonic Stem Cell Research." *http://www.aph.gov.au/library/pubs/cib/2002-03/03cib05.htm.* 2002. (accessed January 22, 2018).

[11.] Robin Downey & Rose Geransar. "Stem Cell Research, Publics' and Stakeholder Views."*Health Law Review* 16, no. 2 (2008): 69-85.

[12.] "Stem Cell Basics." *https//stemcells.nih.gov/info/basics/2/htm.* (accessed March 28, 2018).

[13.] Stob, H. *Ethical Reflections.* William B. Eerdmaus Pub. Co., 1978.

[14.] *The Holy Bible (International Standard Version) Psalm 39:16.*

[15.] *The Holy Bible (Revised Standard Version) Exodus 20:13.*

[16.] Vorster, J. M. "A Christian ethical perspective on the moral status of the human embryo."*Acta Theologica* 31, no. 1 (2011): 189-204.

[17.] Walters, LeRoy. "Human Embryonic Stem Cell Research: An Intercultural Perspective." *Kenedy Institute of Ethics Journal* 14 (2004): 3-38.

[18.] Weir, J. Emmette. "Evaluation of Stem Cell Research and Therapy from the Perspective of Christian Ethics." *www.* 2013. www. (accessed February 23, 2018).