THE SPECIFICITY OF CONSENT WITHIN THE FRAMEWORK OF MEDICAL EXPERIMENTS ON LIVING HUMAN EMBRYOS IN ALGERIA

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Abstract *– The condition of consent is one of the most significant requirements stipulated by the legislator within the provisions of Health Law 18-11, due to its pivotal role in legitimizing medical experiments, which requires that this consent must be free, honest, and informed; and it must be issued in written form, with the possibility of revocation, allowing the termination of the experimentation at any time upon request. However, no clear stance has been taken regarding consent within the framework of medical experiments on living human embryos. The legislator has merely established a general legal foundation, emphasizing the necessity of obtaining consent from the legal representative in cases where the subject of the experiment is unable to provide consent. This can be considered as an indication of the permissibility of experimentation based on the consent of the legal representative.*

Keywords: *Medical experiments, Living human embryos, Consent, Legal representative, Health Law*

INTRODUCTION

The field of medicine, like other sciences, is continuously advancing to the extent that doctors and researchers may struggle to keep up with the new developments and assimilate them. Due to this progress, modern medicine has surpassed the boundaries of traditional medical practices and discovered innovative ways to treat and prevent diseases.

This evolution in medical sciences is a result of medical experiments which are considered unavoidable interventions, especially in the field of embryology. Medical disciplines have given particular attention to embryology, considering it the starting point of human formation and the core of humanity. This phase is crucial as it shapes the organs and systems of the human body, leading to a significant qualitative leap in this field. Medical research has yielded astonishing results, including the understanding of fetal development and growth, determining gender, artificial insemination outside the womb, and other medical advancements in this domain.

However, these medical experiments which now became an inevitable reality pose a potential threat to humanity as their risks may equal or exceed their benefits. Despite the positive aspect of making important discoveries for treating and preventing diseases, there is a negative side which involves that the conducted medical experiments on the bodies of volunteers or patients can lead to their exploitation without their informed consent.

This situation highlights the need to balance individual interests in body safety and society's interest in advancing medicine for the benefit of humanity. Achieving this requires the establishment of a legal framework that ensures a balance between these two interests, regulating medical experiments by defining conditions that must be respected to legitimize these medical practices legally.

One of the most crucial conditions is the requirement for consent, meaning the individual's right to give prior approval for undergoing medical experiments. It is essential to consult the participant in the experiment to allow them to express their consent or refusal regarding the procedure.

Based on the foregoing, and given the broad interest in the embryo amid medical advancements, considering it a vulnerable being, it becomes crucial to safeguard it from all deviations and risks that may affect its rights due to some modern techniques. This raises the question of the feasibility

of achieving consent and how to express it within the framework of medical experimentation on a living human embryo.

In order to clarify the various aspects of the research subject and address the raised issues, we adopted a descriptive methodology to highlight the concepts related to the study topic. Additionally, we utilized a descriptive-analytical approach by reviewing various legal texts regulating the subject and analyzing them. This involves delving into the concept of medical experiments on living human embryos, and then exploring the condition of obtaining consent for medical experiments on living human embryos.

1. The Concept of Medical Experiments on Living Human Embryos

The research topic on the concept of medical experiments on living human embryos can only be defined by delving into the definition of these experiments. Additionally, it requires understanding the forms of living human embryos, considering them as the subject on which such actions are taken.

1.1. Definition of Medical Experiments on Embryos

Medical experiments on human embryos are considered one of the latest developments and outcomes of scientific advancements in the fields of life sciences and biology. Defining these experiments requires first addressing the definition of human experiments and their types, followed by defining human embryos.

I. Medical Experiments

Medical experiments are scientific or medical procedures conducted by a researching physician on a patient or a volunteer. The aim is to test a specific drug or the success of a particular surgical procedure whose outcomes are unknown beforehand. The objective is to obtain new information to serve medicine and humanity[1].

It is also known that these experiments encompass any research intended to make progress or achieve scientific innovation, particularly concerning the functions of human organs, whether in a state of health or disease. The research should be applicable and capable of practical implementation[2].

Legal jurisprudence defines them as statistical operations of an experimental research methodology conducted on humans. Their analysis reveals the extent of the presence of a new scientific hypothesis or the effectiveness and accuracy of an existing one, contributing to the advancement of human knowledge in the field of the conducted medical experiment[3].

Another definition states that medical experiments are a collection of research and studies conducted on human beings with the aim of advancing medical and biological sciences[4].

In reference to the Algerian legislator, medical experiments are defined and referred to as "clinical studies". This is outlined in Article 377 of Health Law[5] 18-11, where the first paragraph states: "Research in the field of life medicine involves conducting studies on the human being for the purpose of developing epidemiological, diagnostic, biological, and therapeutic knowledge, and improving medical practices. These studies are referred to in this law as 'clinical studies'".

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[1] Belhadj Al-Arabi, Rulings on Medical Experiments on the Human Body in Light of Sharia and Contemporary Medical Laws: A Comparative Study, Dar Al-Thaqafa for Publishing and Distribution, Jordan (2012), pp.24-25.

[2] Ashraf Gaber El-Sayed Moussa, Professional Liability Insurance for Physicians, doctoral thesis, Cairo University (1999), p.294.

[3] Mohammed Hamed Hussein, The Legal System for Medical Experiments on Humans, Journal of Legal and Political Sciences, Vol. 11, Issue 01, College of Law and Political Sciences, Diyala University (2022), p.458.

[4] Khaled Hamdi Abdel Rahman, Informed Consent - Legal Regulations, Dar Al-Nahda Al-Arabiya, Cairo (2000), p.98.

[5] Law No. 18-11, dated July 2, 2018, relating to health, Official Gazette No. 46, issued on July 29, 2018.

Medical experiments vary depending on the goal or purpose that the physician seeks to achieve with each one. They may aim to treat the individual undergoing the experiment or simply gather new scientific or technical data. These experiments are divided into two categories:

-Therapeutic Experiments: These experiments are conducted by physicians with the intention of treating the patient. Modern methods are used in cases where there is no known cure capable of achieving recovery[6]. Physicians turn to these experiments to find new treatments for diseases that have resisted traditional technical rules and established scientific principles in achieving successful treatment[7].

They may also involve experiments aimed at finding a more effective treatment for a presented condition, where traditional methods have failed to provide an effective cure.

-Non-Therapeutic Experiments: These medical experiments aim to gain new knowledge regarding diagnosis or treatment. This type of experiment is usually conducted on healthy volunteers or patients without them having a direct personal interest in the experiment[8]. Alternatively, they may involve creating a medical condition in a healthy volunteer and subjecting them to experiments and research to determine the optimal treatment method. In some cases, a modern method may be applied to assess its effectiveness[9].

II. Human Embryos

The human embryo is the creature that forms in the womb of a woman as a result of the fertilization of her egg by the sperm contained in the man's seminal fluid[10].

In contemporary medical terminology, the term "embryo" is used to refer to the period between the implantation of the fertilized egg in the uterine wall. This period extends from the second week until the end of the eighth week. Afterward, that period, it is referred to as the "fetus", and this phase begins from the start of the third month and concludes with the birth. Meanwhile, some may use the term "embryo" specifically for the unborn child in the mother's womb once its structure is complete and it is capable of surviving outside the womb. This typically occurs from the beginning of the seventh month until the time of birth[11].

Among medical scholars, some believe that the embryo is the creature that forms from the moment of fertilization, which is the process of the sperm meeting the egg and their fusion to produce the fertilized egg. This continues until the stage of the initiation of the soul's infusion into the body, and the commencement of life, which begins after the fourth month[12].

In legal terminology, the embryo is the product of the fertilization of the egg by the sperm in the mother's womb until the completion of pregnancy before birth. There is no distinction between different stages in this definition[13]. It is also defined as the fertilized egg by the sperm. Additionally, it is known as the stable being residing in the woman's womb after the fusion of the

[6] Bashir Mohamed Amin, Legal Limits of Biomedical Research on Humans, Journal of Algerian Public and Comparative Law, Vol. 06, Issue 01, Djillali Liabes University, Sidi Bel Abbès, Algeria (2020), pp.126-127.

[7] Miftah Misbah Bashir Al-Ghazali, Criminal Liability of Physicians for Medical and Scientific Experiments: A Comparative Study, Dar Al-Kutub Al-Wataniya, Benghazi (2005), p.68.

[8] Zahdour Ashwaq, Research in the Field of Biological Medicine under Algerian Health Law of 2018 - Medical Experiments on Humans (Comparative Study), Annals of the University of Algiers 1, Vol. 36, Issue 01, Faculty of Law and Political Sciences, Oran 2 University, Algeria (n.d.), p.241.

[9] Miftah Misbah Bashir Al-Ghazali, supra note 7, at pp.71-72.

[10] Yusuf Boushi, Legitimacy of Scientific Medical Experiments on Aborted Human Fetuses in Islamic Jurisprudence and Positive Law, Issue 02, Journal of Kuwait International Law College, Ibn Khaldoun University, Tiaret, Algeria (2020), p.611.

[11] Ayman Mustafa Al-Jamal, Conducting Scientific Experiments on Human Fetuses, 1st ed., Dar Al-Fikr Al-Jamei, Alexandria (2010), pp.21-22.

[12] Sina Muscati, Defining a New Ethical Standard for Human In Vitro Embryos in the Context of Stem Cell Research, Duke Law and Technology Review, vol. 1.1, pp.1-2 (2002).

[13] Fawzia Abdul Sattar, Explanation of the Penal Code, Special Section, 2nd ed., Dar Al-Nahda Al-Arabiya, Beirut (1998), p.499.

male cell of the sperm with the female cell of the egg[14]. However, some may use the term "embryo" for the woman's egg fertilized by the man's sperm from the moment of fertilization until birth[15].

It is evident that the embryo according to legal scholars is the entity that forms in the womb from the fusion of the sperm and the egg. From the very first moment when the male cell merges with the female cell, the new cell is considered an embryo. This is without distinction between different stages, contrary to the medical concept[16].

III. Medical Experiments on Human Embryos

Medical experiments on the human body encompass any scientific or experimental research in the field of medicine that involves the human body, whether it is an unhealthy or even a healthy and living human being after birth, or even the human embryo.

Therefore, medical experiments on human embryos can be defined as experiments conducted on the embryo. They can be categorized into two types:

-Therapeutic Experiments on Human Embryos: As mentioned earlier, therapeutic experiments aim to treat the individual undergoing them, but what differs in the case of human embryos is that the treatment may be for the embryo undergoing the experiment, as well as for other individuals.

Therapeutic experiments aim to treat the embryo include early diagnosis experiments for diseases, involving medical interventions to examine and identify the health condition of the embryo. The goal is to ensure its freedom from serious diseases and congenital deformities[17]. Additionally, genetic engineering experiments became an inevitable outcome of early diagnosis experiments. If a specific disease is detected in the embryo, medical professionals seek to treat it using genetic engineering. This involves isolating the diseased gene and replacing it with a healthy gene, essentially repairing the medical condition[18].

As for experiments aimed at treating patients, they encompass trials on embryonic stem cells, which are the primary cells in the human body. These cells are obtained by extracting them from embryos in their early days, with the goal of treating another individual. Additionally, there are experiments involving medicinal embryo treatments, where several eggs are fertilized to select one that suits the sick child. This approach is taken when all medical methods fail to cure the child, and the only option remaining is to conceive a child carrying the same genetic makeup[19].

-Non-therapeutic Experiments on Human Embryos: include gender selection trials. This process involves separating the chromosomal sperm elements (Y) from the female elements (X) before external fertilization. Afterward, fertilization occurs according to the desired gender, where the man's sperm determines the embryo's gender[20].

Additionally, there are genetic engineering experiments, conducted similarly to therapeutic genetic engineering experiments. However, they differ in that their purpose goes beyond treatment. These

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[14] Ben Zerfa Hawaria, Abortion Crime: A Comparative Study between Positive Law and Sharia, Master's Thesis in Criminal Law, Faculty of Law, Oran University (2010), p.09.

[15] Ayman Mustafa Al-Jamal, supra note 11, at pp.22-23.

[16] Muslim Abdul Rahman, Legal Protection of the Fetus in Light of Medical Developments and Positive Laws, Ph.D. Thesis, Faculty of Law and Political Sciences, Djillali Liabes University, Sidi Bel Abbès, Algeria (2018-2019), p.19; Amir Talib Hadi Al-Tamimi, Civil Liability Arising from Medical Interventions in the Fetus – A Comparative Study in Iraqi Civil Law and Comparative Law, Faculty of Law, Ain Shams University, Egypt (2015), p.19.

[17] Mahmoud Ibrahim Mohamed Morsi, The Scope of Criminal Protection for the Hopeful and the Congenitally Deformed in Islamic Criminal Jurisprudence, Islamic Criminal Law, and Positive Criminal Law, Dar Al-Kotob Al-Qanuniya, Egypt (2009), p.436.

[18] Mahmoud Ahmed Taha, Reproduction Between Prohibition and Legitimacy, Manshurat Al-Maaref, Alexandria (2008), p.225.

[19] Sarah Ayadi, Legal Regulation of Medical and Genetic Experiments on Fetuses and Human Embryos - The French Law as a Model, Journal of Legal and Political Sciences, Vol. 10, Issue 02, Annaba University, Algeria (2019), p.859.

[20] Babiker Al-Sheikh, Legal Liability of the Physician: A Study on General Provisions of Comparative Legal Policies and Judicial Trends, 1st ed., Dar and Maktab Al-Hamid for Publishing and Distribution, Oman (2002), p.305.

experiments aim to program human traits and characteristics, leading to the birth of children with specific qualities[21].

1.2. Images of Living Human Embryos

The foundation of the embryo's formation lies in the male germ cells, which reach the woman's uterus prepared to receive them. This occurs through sexual intercourse between spouses, constituting natural insemination. However, pregnancy might not occur due to an organic issue. In such cases, an alternative method called artificial Insemination can be utilized. Additionally, human embryos can be obtained through cloning technology and, in some instances, through virginal insemination.

I. Human Embryos Resulting from Natural Insemination

Natural fertilization occurs through sexual intercourse between a man and a woman, during which the woman's egg is fertilized by the man's sperm. In this way, the embryo is formed naturally through direct sexual contact between the man and the woman. For a successful pregnancy, both partners should be in good health, and their reproductive systems should be free from any reproductive diseases[22].

During the meeting between the spouses, sexual intercourse takes place, and the man's sperm is ejaculated into the woman's vagina, heading towards the cervix through the fallopian tube. The cilia of this tube help in guiding the sperm towards the uterus. The woman's ovary begins to swell in the middle of the month, and when the egg is released from the ovary, the cilia of the fallopian tube capture it immediately, cradling it and allowing it to rest for a period of time. During this time, millions of sperm race towards the egg, which has the ability to survive inside the woman's vagina for 2 to 3 days. Despite the competition, only one sperm usually manages to penetrate the egg. At the moment, the sperm penetrates the egg's wall, fertilization occurs in the fallopian tube, and then the fertilized egg is implanted in the uterus. Following that, the fertilized cell begins to divide to form the embryo, a process that takes between 4 and 6 days. Meanwhile, the uterus is prepared to receive the embryo[23].

II. Human Embryos Resulting from Artificial Insemination

Artificial insemination is the process of fertilizing a woman's egg with a man's sperm that takes place inside the tubes. This procedure is typically used when a woman is experiencing infertility due to blockage of her fallopian tubes, the tubes connecting her ovaries to her uterus. Medical professionals restore the process to its nature by transferring the fertilized egg into the woman's uterus within a medical context[24]. In other words, it involves combining a male sex cell and a female sex cell through non-natural means under the care of a specialized medical professional. There are two main forms:

-Internal artificial insemination: involves injecting the man's sperm into the appropriate location inside the woman's body. It is also known as "intrauterine insemination". This process entails introducing active sperm into the uterus during ovulation by injecting the seminal fluid using a specialized syringe through the cervical wall[25].

This type of insemination is considered the first emerging method in artificial insemination technology. It involves introducing sperm into the reproductive tract of the female through medical

[21] Rahli Souad, The Legal System for Medical Experiments on Human Fetuses, Ph.D. Thesis, Faculty of Law, University of Algiers 1, Algeria (2014-2015), p.114.

[22] Ahmed Mohamed Lotfi Ahmed, Artificial Insemination: Between Medical Opinions and Jurisprudential Views, 1st ed., Dar Al-Fikr Al-Jamei, Egypt (2006), p.19.

[23] Ahmed Mohamed Lotfi Ahmed, supra note 22, at p.20.

[24] Al-Arabi Belhaj, Legal Research in the New Family Law, 1st ed., Diwan Al-Matbouaat Al-Jameia, Algeria (2015), p.247.

[25] Jamal Ghrissi, Ilham Ben Khalifa, Artificial Insemination Process and the Challenges it Poses in Establishing Parentage between Islamic Sharia and Algerian Family Law, Journal of Research and Studies, Vol. 19, Issue 01, University of El Oued, Algeria (2022), p.83.

procedures instead of natural intercourse[26]. The insemination process occurs in stages. The first stage involves separating the fast-moving sperm from the slow or immobile sperm through washing and concentrating. In the next step, these washed and concentrated sperm are directly introduced into the uterus on the day when the ovary produces one or more eggs for fertilization[27].

-External artificial insemination: occurs between the sperm of the man and the egg of the woman in a tube or test dish in medical laboratories. Subsequently, the fertilized egg is implanted into the woman's uterus. Doctors resort to this form of insemination when natural fertilization is hindered due to blockage of the fallopian tube in the woman, congenital defects, inflammation, or other factors[28].

This type of insemination is more modern and advanced than the internal insemination technique, which has not definitively solved all infertility problems. It is called external insemination because insemination occurs outside the uterus. This case is often referred to as "tube baby" because insemination takes place in a test tube. Some doctors consider the tube as an alternative, while others use a laboratory dish[29]. In this process, sperm and eggs are collected in a test tube or laboratory dish in a synthetically prepared environment. After insemination and appropriate division, and once the sperm and egg have combined, the fertilized egg is then returned to the uterus[30].

III. Human Embryos Resulting from Cloning

Cloning is a technique that involves producing a living organism that is identical to another organism[31]. This is achieved by manipulating a somatic cell from a specific organism, causing it to divide and develop into a replica of the living organism from which the cell was taken[32]. Cloning aims to create a living being that is similar to the one from which the living cell was derived. Therefore, cloning is a non-sexual process for reproducing genetically identical organisms, forming a living organism as an exact copy in terms of genetic, physiological, and morphological characteristics of another living organism[33].

Human cloning is considered as a method of reproduction relies on a non-natural process involving the extraction of a somatic cell from a living human, whether male or female. This cell contains the genetic material of the individual. Subsequently, an unfertilized egg is obtained, and its nucleus is removed. The nucleus from the somatic cell is then inserted in place of the removed nucleus in the egg. This reconstructed egg is stimulated by exposure to an electric spark and substances that aid in division. Finally, the manipulated egg is implanted in the uterus, leading to the birth of a child that is an exact replica of the human from whom the cell was taken[34].

While some scientists consider the idea of human cloning to be speculative, numerous studies have categorized human cloning as one of the most unconventional medical procedures. Consequently, human cloning procedures have attracted the attention of scientists and researchers. Current news

[26] Mahmoud Abdel Rahim Mehran, Legal and Sharia Rulings on Genetic and Reproductive Intervention, 1st ed., Dar Al-Nahda Al-Haditha, Egypt (2001), p.480.

[27] Balbahi Saida, Surrogacy and its Impact on Lineage, Master's Thesis, Faculty of Law, University of Youcef Ben Khedda, Algeria 1, (2014-2015), p.16.

[28] Jamal Ghrissi, Ilham Ben Khalifa, supra note 25, at p.84.

[29] Mahmoud Saad Shahin, In vitro Fertilization: Between Prohibition and Permission, and the Position of Islamic Jurisprudence, Dar Al-Fikr Al-Jamei, Alexandria (2010), p.118.

[30] Fatima Youssefawi, Criminal Liability in Artificial Insemination Procedures, Al-Haqqiqa Journal, Issue 29, University of Adrar, Algeria (n.d.), p.298.

[31] Jaber Ali Mehran, The Ruling on Cloning and Artificial Insemination in Islamic Jurisprudence, Legal Studies Journal, Faculty of Law, Assiut University, (1998), p.148.

[32] Sabry Eldemerdash, Cloning: The Bomb of the Era, 1st ed., Dar Al-Fikr Al-Hadith, Beirut (1997), p.24.

[33] Karem El-Sayed Ghoneim, Cloning: Between Scientific Experimentation and Divine Legislation, 1st ed., Dar Al-Fikr Al-Arabi, Cairo (1998), p.69.

[34] Adnan Abbas Moussa, The Ethical Responsibility of the International Community Regarding Human Cloning, Journal of Political Sciences, Issue 43, College of Law, University of Baghdad (n.d.), p.79.

has circulated reports about the first human clone, a girl named Eve by the controversial figure Raël.

In December 1998, scientists from Kyunghee University in South Korea announced their success in cloning the first human embryo, named "Ahs't".

In November 2001, the American company Advanced Cell Technology announced in the Journal of Regenerative Medicine online that it had succeeded in producing cloned human cells.

In 2002, the National Academy of Sciences in America announced its success in treating symptoms of Parkinson's disease using neural cells derived from embryos, sparking optimism about what is known as therapeutic embryonic cloning[35].

In 2004 and 2005, Hwang Woo-suk, a professor at Seoul National University, published two separate articles in the scientific journal Science, claiming that he successfully cloned embryonic stem cells from a cloned human blastocyst using somatic cell nuclear transfer techniques.

In May 2013, a group of scientists published a report on a successful attempt at human cloning that resulted in viable embryos capable of growth. The researchers obtained embryonic stem cells from bladder cells, which could potentially lead to successful therapeutic cloning. However, it remains unclear whether the cloned embryos are capable of development, as no experiments for development have been initiated yet.

Human cloning varies in its purposes, and many believe that its sole aim is reproduction, yet this is not entirely accurate. In reality, human cloning also seeks therapeutic and medicinal applications. Therefore, it can be categorized into two main types: reproductive human cloning and therapeutic human cloning. The discussion will focus on aspects related to human embryos.

-Reproductive Human Cloning: also known as "Reproductive Cloning." The aim of this type is to introduce and implant a cloned embryo into the uterus of a woman for the birth of a cloned child. This, in turn, can be classified into two types:

A-The Embryonic Reproductive Cloning: involves using the technique of external artificial insemination to obtain more than one embryo. The process begins by retrieving the egg from the wife's ovary during ovulation, placing it in a suitable liquid, and then placing it in an incubator for growth. The husband's sperm is collected and concentrated in a specialized laboratory, then a concentrated amount is taken and placed in the dish containing the egg. After the fertilized egg grows, and the division process begins, scientists intervene to separate the embryo cells using techniques of embryo cell biopsy. Instead of obtaining a single embryo from the fertilized egg, multiple embryos are obtained depending on the stage of division during the intervention[36].

It is a process of separating cells from a fertilized egg, usually after it has divided into two or more cells, where each cell is capable of further division after being prepared for growth and division conditions. The division and separation continue in each cell, and then some of these cells are implanted in the mother's uterus, while the rest are preserved by cooling until needed[37]. This process is referred to as embryo splitting and twinning. In this scenario, the fetus carries the characteristics of both the father and the mother. The goal of cloning in this case is to produce multiple embryos from a single embryo[38].

B-Somatic Reproductive Cloning: This refers to a form of asexual reproduction achieved by merging the nucleus of a human somatic cell with an enucleated human egg using an electric current. The

[35] Al-Nahawi Suleiman, Artificial Insemination in Algerian Law, Islamic Sharia, and Comparative Law, Ph.D. Thesis, Faculty of Law, University of Algiers 1, (2010-2011), p.194.

[36] Ben Issa Rashida, Human Cloning: A Medical, Jurisprudential, and Legal Study, 1st ed., University of Algiers, Algeria (2005), p.71.

[37] Samiya Harir, The Sharia's Stance on Cloning, Journal of Contemporary Jurisprudential and Economic Issues, Vol. 02, Issue 01, University of Prince Abdul Qadir for Islamic Sciences, Algeria (2022), p.80.

[38] Shoukry Zakaria Al-Salehi, Artificial Insemination Between Islamic Sharia and Positive Laws: A Comparative Study, Master's Thesis, Cairo University, Egypt (2001), p.330.

fertilized egg is then implanted into the uterus. This method relies on somatic cells rather than germ cells and is also known as nuclear transfer cloning[39].

Therefore, it is the production of offspring from somatic cells taken from adult individuals, where the newborn carries all the traits of the individual donating the somatic cell only. The reason for the offspring appearing this way is the presence of a doubled set of chromosomes, meaning the cell contains the entire genetic structure, makeup, or genome. It does not require passing through other developmental stages, allowing it, if given the opportunity, to grow as a primary cell. It produces a complete and identical copy of the same living organism anew. Scientifically, this technique is known as somatic cell nuclear transfer, relying on killing the nucleus of an unfertilized egg with radiation and implanting the nucleus of a somatic cell in its place. After electric stimulation for division, it is returned to a surrogate mother, where it grows and forms an embryo[40].

-Therapeutic Embryonic Cloning: This refers to the process aimed at utilizing cloning as a therapeutic tool by cloning human embryos from somatic cell nuclei to obtain their embryonic organs or embryonic stem cells. These cells have the ability to grow, differentiate, and specialize easily to form various cellular patterns. They are obtained from embryos in their early stages of development, typically within a week[41].

This cloning process is carried out using somatic cell nuclear transfer technology. However, the cloned embryo does not proceed through its growth stages but halts at an early stage, typically within a week. At this point, it becomes a mass of cells. The reason for this lies in the fact that the embryo is needed during this early stage of growth, serving as a rich source of embryonic stem cells. These cells can later be isolated and processed in the laboratory to form tissues of various cellular types. This type of embryo is commonly referred to as a chemical embryo.

After obtaining the embryonic or cellular mass, experts in the laboratory separate the cells from each other by removing the surrounding cellular layer using specific fluids and chemical sera. These separated cells are then transferred to a new cellular medium, and selected sorting and differentiation factors are added to initiate specialization and differentiation, ultimately producing the desired organ. They are left for about a week in specialized laboratory dishes until cellular colonies form. After this, they are transferred to the damaged tissues or the relatively non-functional organ. They are implanted through microscopic injection after incising the skin in the affected area and applying a biologically active chemical[42].

Therapeutic cloning aims to use genetic material from the patient's cells to produce cells that can replace damaged patient cells. In this process, complete embryos are not grown and terminated. The focus is on the early stages of embryos, exploring the potential of primary stem cells that can develop into cells, tissues, organs, bones, muscles, and even nerves. This type of cloning is prevalent today because clients are assured that this technology allows tissue cloning without the fear of rejection by the recipient's body. This is achieved by extracting the DNA from the patient and using it to obtain the cloned embryo[43].

IV. Virginal Insemination

Virginal Insemination also known as parthenogenesis or asexual reproduction, is a rare occurrence in humans and may seem far-fetched. However, a similar perspective was once held for

[39] Al-Nahawi Suleiman, supra note 34, at p.197.

[40] Ayman Mustafa Al-Jamal, The Legitimacy of Using Human Embryos in Scientific Research Procedures: A Comparative Study between Islamic Jurisprudence and Positive Law, Dar Al-Jamea Al-Jadida Publishing, Alexandria (2008), p.234.

[41] Dictionary of Biology (1994), Presses Universitaires de France, Paris, p.121.

[42] Fadel Iyad Al-Obaidi, Biological Cloning: The Long Path to Internationalization and Human Cloning, 1st ed., Dar Al-Fikr, Damascus (1997), p.126.

[43] Ramzi Fareed Mohamed Mabrouk, Human Cloning Between Sharia and Law: A Study on its Legitimacy from both Legal and Sharia Perspectives, New Gellah Library, Mansoura (2001), p.03.

parthenogenesis in any vertebrate. Now, it has been documented in various female species among fish, amphibians, reptiles, and birds[44].

Contrary to sexual reproduction, which involves the fertilization of a mature egg by sperm, leading to genetic diversity within the human species as half of the chromosomes come from the mother and the other half come from the father, parthenogenesis lacks this diversity and variation. In parthenogenesis, the egg is stimulated for fertilization, undergoes division and growth to form an embryo without the need for sperm. All chromosomes in this case originate solely from the mother, resulting in the new organism being a female, of the same gender as the mother.

In virginal insemination, the female's body has a unique way of filling the genetic information typically provided by sperm. However, the new organism may not be genetically identical to its mother due to the exchange of chromosomes that occurs during the formation of eggs[45].

Scientists have begun applying this technique to humans, using a specialized needle method to stimulate the egg to divide and multiply, forming human embryos that can be utilized in their early stages for therapeutic purposes. However, in practical terms, the success of this experiment in producing fully developed embryos that continue to grow has not been achieved. Typically, these embryos die in their early stages in the laboratory, making them suitable for use by extracting stem cells for therapeutic purposes.

2. The Requirement of Consent for Conducting Medical Experiments on Living Human Embryos

According to general principles, consent is the expression of will from a competent and capable individual, or someone legally representing them. This expression should be voluntary, explicit, and for a legitimate purpose[46]. It is one of the essential conditions for the legitimacy of conducting medical experiments. However, obtaining valid consent poses various challenges within the context of experimenting on human embryos.

2.1. Descriptions of Consent within the Framework of Medical Experiments on Human Embryos

The condition of consent is one of the most important requirements for the legitimacy of conducting medical experiments on the living human body. This is due to the potential risks involved in such experiments, and it involves the voluntary expression of agreement by the individual undergoing the experiment. It represents the permission given by a competent and informed person, indicating their willingness to allow medical or scientific intervention that may impact the integrity of their body, whether for therapeutic or scientific purposes.

However, this consent holds no legal value unless certain conditions are met and it is issued by a person with full legal capacity. Legal capacity in humans depends on their ability to acquire rights and assume responsibilities. There are two types of legal capacity: capacity to acquire, which is the person's competence to acquire rights and bear obligations, and capacity to perform, which is the person's ability to express their will in a manner that the law recognizes with legal consequences, indicating their ability to engage in legal acts and transactions[47]. In this context, it becomes evident that the legal capacity of the embryo is a capacity to acquire, while the legal capacity necessary for valid consent is a capacity to perform.

In the context of medical research, eligibility is characterized by the participant's capacity or ability in a research study to provide free, informed, and voluntary consent in a model[48]. When it

[44] Eric Pank, "Virgin Birth Females," The University of Texas, Austin, www.zo.utexas.edu.thoc.

[45] Abdelmonem Awad Hegazy, Aiman Ibrahim Al-Qlaitat, Raafat Awad Hegazy, "A New Hypothesis May Explain Human Parthenogenesis and Ovarian Teratoma: A Review Study," International Journal of Reproductive Biomedicine, Vol. 21, Issue 04, May 2023, p.278.

[46] Mahmoud Nagib Hassani, Explanation of the General Penal Code, 1st ed., Dar Al-Nahda Al-Arabia, Cairo (1986), p.187.

[47] Moftah Mohamed Aghzit, Civil and Criminal Protection for the Fetus: Between Islamic Jurisprudence and Positive Law, Dar Al-Kotob Al-Qanunia, Cairo (2006), p.48.

[48] World Health Organization (WHO), Research Ethics Committees, Core Concepts for Building Capacity, Geneva (2013), p.05.

comes to experiments involving fully developed human beings, given their legal personality and full capacity, it poses no minimal concern. Consent can be issued by them to undergo medical experiments, whether therapeutic or scientific.

Despite the embryo not having the necessary eligibility for valid consent, and thus unable to provide consent for a medical experiment, medical experimentation on human embryos has become a scientific and medical necessity. Modern medicine has advanced to ensure the right of the human embryo to be born healthy, fully developed, or even to address other conditions, and even achieve the birth of children with specific traits. This has led to experimental medical practices that impact the physiological or even psychological development of the embryo.

However, upon referring to the first paragraph of Article 386 in Health Law 18-11, we find that it states: "Clinical studies can only be conducted if individuals are willing to undergo the clinical study, or when this is not possible, their legal representatives provide their free, explicit, and informed consent...".

Therefore, according to this legal provision, if obtaining the consent of the person undergoing the experiment becomes impossible, it is a requirement to obtain the consent of their legal representative. Consequently, the consent of the legal representative is required for the embryo if the experiment involves it.

Article 386 of Health Law 18-11 stipulates that: "Clinical studies can only be conducted if individuals are willing to participate, or if not possible, their legal representatives consent freely, explicitly, and informed in writing, after being informed by the doctor or researcher representing them, especially about:

-The purpose, methodology, duration, expected benefits, difficulties, and risks of the research, as well as possible medical alternatives.

-Their right to refuse participation in any research or withdraw their consent at any time without any responsibility and without affecting their medical care."

Based on what the legislator has stated in this article, it is a requirement for the validity of the legal representative's consent for the embryo that the consent be free, informed, explicit, and in writing, in addition to the possibility of revoking it at any time.

I. Consent Must Be Free

According to the text of Article 386 of the aforementioned Health Law, the validity of the consent of the legal representative of the embryo requires that the consent be freely given, meaning that their will should be sound and free from defects. Consent is not considered valid if the person is a victim of error, fraud, coercion, exploitation, deception, or any other factor that would impair or invalidate the choice[49].

Among the flaws in consent under general rules is the possibility of error. However, this flaw is rarely found in medical interventions in general, and it is nearly impossible in the field of medical experimentation, especially after emphasizing the commitment of the representing physician or researcher to the duty of strict disclosure to the legal representative. Additionally, these experiments are subject to the opinion of the Medical Ethics Committee for Clinical Studies, according to Article 383 of Health Law 18-11, and the necessity of obtaining explicit and written consent[50]. Nevertheless, this person may fall victim to deceptive and fraudulent tactics that push them to consent to the experiment, such as misrepresenting the triviality of the experiment or attempting to conceal important and necessary data about its reality. Their vulnerability may also be exploited for financial gain or due to their recklessness or lack of awareness of the true nature and risks of the experimental medical intervention, putting them at the mercy of the exploiting physician or researcher.

[49] Abdul Rashid Ma'moun, The Medical Treatment Contract: Between Theory and Practice, Dar Al-Nahda Al-Arabia, Cairo (1986), p.27.

[50] Algerian Health Law, Article 383: "Clinical studies are subject to the opinion of the mentioned Medical Ethics Committee".

However, in the field of medical experiments, coercion is not limited to impairing the will according to the theory of commitment; rather, it includes any form of pressure, regardless of its source, whether medical, economic, or any other form of force. Medical pressure is coercive because scientific medical discovery causes distress for doctors, researchers, and the institutions overseeing such research in obtaining the required human samples due to individuals' concerns about the troubles and risks involved. This poses an obstacle to obtaining the consent of volunteers for these experiments or their legal representatives. Consequently, doctors and researchers may resort to unethical and inhumane methods to circumvent the need to comply with the requirement of respecting the free consent of the individuals[51].

Economic pressure is also coercive to the extent that it leads to jeopardizing the safety of the embryo for any financial benefit, especially when the legal representative is in desperate need of money. This undermines their legal consent. The Algerian legislator addressed this issue in Article 398 of the Algerian Health Law, stating that clinical studies, with the exception of those conducted without direct financial benefit, do not result in any direct or indirect financial compensation for the individuals subjected to them, except for reimbursing the expenses incurred by these individuals. However, the legislator allows some compensation for individuals undergoing medical experiments to cover the burdens and financial expenses they incur during the experiments.

II. Consent Must Be Informed

According to the text of Article 386 of the aforementioned Health Law, consent must be informed. To ensure that the consent of the legal representative of the embryo is informed, it must be issued while the representative is fully aware of the situation. For consent to possess this characteristic, the doctor or researcher conducting the experiment must inform the representative about the nature of the research, whether it is therapeutic or scientific, as well as its objectives, methodology, duration, anticipated benefits, expected risks, and possible medical alternatives.

However, medical experiments involve a level of uncertainty, and it is not possible to guarantee the outcome in advance. While it is easy to inform the legal representative of the embryo undergoing the experiment about the nature and subject of the experiment and its objectives, providing an accurate and comprehensive understanding of all its risks is not possible. On the other hand, the experimenter is not allowed to neglect informing about the ordinary expected effects according to the normal course of events due to the specific nature of medical experiments and the impossibility of predicting all their risks[52].

Therefore, the scope of information in medical experiments varies according to the requirements of each experiment. In the context of therapeutic medical experiments, the legal representative of the embryo undergoing the experiment must be informed about all foreseeable and significant risks, in addition to the expected consequences if the experiment is not continued. In contrast, the requirements for non-therapeutic or purely scientific medical experiments include providing information about all consequences and harms, especially expected medical risks, without limiting the extent of their severity. The Algerian legislator, in the context of scientific medical experiments, went further to require complete absence of any foreseeable serious risk and mandated a prior medical examination of individuals undergoing the experiments, with the results of this examination provided to them before obtaining their consent. This is in accordance with Article 391 of the health Law 18-11, which states: "Clinical studies, especially those without direct individual benefit, must not include any foreseeable serious risk to the health of the individuals

[51] Amr Kouhil, "Legal System for Medical Experiments on the Human Body," Ph.D. Thesis, Faculty of Law and Political Science, University of Djillali Liabes Sidi Bel Abbes, Algeria (2018-2019), p.206.

[52] Sohair Montaser, Civil Liability for Medical Experiments in Light of the Civil Liability Rules for Doctors, Dar Al-Nahda Al-Arabia, Cairo (1990), pp.42-43.

involved. An examination of the individuals concerned must precede these studies, and the results of this examination must be provided to them before obtaining their consent".

III. Consent Must Be Explicit and in Writing

According to the provisions of Article 386 of the health Law mentioned above, the consent issued must be explicit and in written form. Explicit consent means that the legal representative of the embryo undergoing medical experimentation must clearly express their agreement, avoiding any implicit expression. The legislator has explicitly required that the consent of the legal representative be documented in writing, whether the medical experiment is therapeutic or scientific. This emphasizes the importance of written consent in thoroughly informing the legal representative about the risks of medical practices, ensuring a minimum level of protection, and serving as evidence.

The written consent is included in the study protocols and applies specifically to the medical experiment requiring consent. The legal representative's right is not limited to granting consent before the experiment but continues throughout all stages. The legal representative has the right to modify their consent at any time without bearing any responsibility and without affecting the medical care for the embryo. This is in line with the last paragraph of Article 386 of Law 18-11, stating: "Their right to refuse participation in a study or withdraw their consent at any time without bearing any responsibility and without affecting their medical care".

Article 387 of the same law also mandates the inclusion of the individual's consent within the study protocol. The consent applies exclusively to the specified study and can be withdrawn at any time without bearing any responsibility or causing harm to medical care. Furthermore, it specifies that an individual cannot subject themselves to multiple biomedical studies simultaneously.

2.2. Challenges of Consent within the Framework of Medical Experiments on Human Embryos

The Algerian legislator, despite approving medical experiments on humans through the health Law 18-11 and emphasizing the necessity of obtaining written, voluntary, informed consent from the person undergoing the experiment or their legal representative, has not enacted specific legal provisions regulating the issue of medical experiments on living human embryos. Despite scientific advancements in the medical field leading to such medical practices influencing the formation of embryos from conception to birth, whether the embryo is in the uterine wall or in an external test tube, the positive impact aims at the birth of a healthy child free from diseases and deformities. However, there can also be negative consequences, such as distorting the image of the embryo, halting organ growth, or causing other damages. Perhaps the reason for not regulating these studies under Law 18-11 is the legislator's awareness of the technical challenges associated with such applications. Nevertheless, this doesn't preclude the Algerian legislator from keeping pace with scientific developments in the medical field and establishing legal controls for the use of human embryos in scientific research.

The issue of medical experiments on human embryos has raised numerous questions due to the Algerian legislator's oversight in regulating them. Article 377 of Health Law 18-11 states, "Research in the field of biological medicine involves conducting studies on the human being...". The question arises as to whether the term "human being" encompasses the embryo. This raises a legal issue in determining the legal nature of the embryo – whether it is considered a legal person with all rights, including the right to life and physical safety, or if it is regarded merely as the subject of the mother's rights over its components[53]. Since the embryo, if considered a human, is incapable of expressing its will regarding medical experiments, does the law applicable to minors and incapacitated adults, with their legal representative acting on their behalf, apply in this case? If so, does the legal representative of the embryo refer to the father, the mother, or both? If obtaining consent from them proves impossible, who legally represents them? In the scenario where the embryo is not considered a human but merely the product of conception, would consent from the mother alone be sufficient to subject the embryo to medical experiments?

[53] Ahmed Sharaf Eldin, Reproductive Engineering and Genetics in Light of Ethics and Laws, The Academic Library, Egypt (2001), p.80.

It is widely agreed that the embryo in the mother's womb is not considered a human being; it remains a developing entity until birth. The moment of birth is when the embryo acquires the status of a human, and legal protection is granted to individuals undergoing medical and scientific experiments from that point onward[54]. The legal personality of a person begins at the time of their complete and live birth, and legal recognition is only afforded to entities with the capacity for independent existence. The embryo, until birth, remains a part of its mother, and thus, the live birth of the embryo is a prerequisite for it to acquire legal personality. Before birth, the embryo does not possess legal personality. This is in accordance with Article 25 of Law No. 75-58, the Civil Code[55], which stipulates that "the personality of a person begins at the time of their complete and live birth and ends with their death. However, the embryo enjoys rights as determined by law, provided it is born alive".

Furthermore, referring to Article 386 of Health Law 18-11, the legislator has allowed both therapeutic and scientific medical experiments, provided there is free consent from the person undergoing the experiment, or if not possible, from their legal representative. This raises questions about the legitimacy of subjecting live human embryos to scientific and therapeutic medical experiments, particularly those intended for the treatment of other individuals.

Regarding therapeutic experiments aimed at treating the embryo, such as early diagnosis experiments for diseases and genetic engineering experiments, which are considered an inevitable result of disease discovery leading to the use of genetic engineering, the legislator, through Article 76 of Health Law 18-11[56], under the section on "Protecting the Health of the Mother and Child", has specified that the purpose of early disease diagnosis is to detect a disease of significant severity for the embryo inside the womb. The diagnosis must be ensured in qualified and accredited facilities. However, when it comes to experiments aimed at treating patients, the legislator has not provided specific regulations, despite their importance in advancing medical sciences.

As for scientific experiments on human embryos, the legislator has explicitly prohibited the trading of surplus embryos. Surplus embryos refer to fertilized eggs that exceed the needed quantity and have not been implanted in the womb. This prohibition applies to scientific research, whether it involves donation, sale, or any other form of transaction. This is stated in Article 374 of Health Law 18-11: "Trading is prohibited, for scientific research, in relation to:

- Sperm.
- Eggs, even between related wives.
- Embryos exceeding the prescribed number or not, whether for a surrogate mother or another woman, whether she is a sister, mother, or daughter.
- Cytoplasm".

Regarding medical experiments on cloned embryos and gender selection, the legislator has prohibited all cloning of genetically identical living organisms, specifically concerning human beings. This includes a ban on all forms of human cloning. Additionally, the law prohibits gender selection, as stated in Article 375 of Health Law 18-11: "All cloning of genetically identical bodies is

[54] Mervat Mansour Hassan, Medical and Scientific Experiments in Light of the Sanctity of the Human Body: Organ Transplantation, Cloning, Stem Cells, Comparative Study, Dar Al-Jamea Al-Jadida, Alexandria (2016), p.195.

[55] Law No. 75-58 of September 26, 1975, Official Gazette issued on September 30, 1975, No. 78, amending and supplementing the Civil Code, as amended by Law No. 05-10 of June 20, 2005, Official Gazette issued on June 26, 2005.

[56] Health Law No. 18-11, Article 76: "Prenatal diagnosis may be conducted by a medical order to detect a potentially serious disease of the fetus or embryo within the womb. Prenatal diagnosis is ensured in qualified or accredited facilities for this purpose. The conditions for accrediting these facilities are determined by regulation".

prohibited concerning the human being, as well as all gender selection". Consequently, these experiments on human embryos are deemed impermissible.

Consent in medical experiments on embryos takes on a more private nature due to the lack of legal personality for the embryo and the inadequacy of the representative's consent to authorize all types of experiments on it. Due to the ambiguity in Article 386 of Health Law 18-11 and the absence of a precise legal text regarding consent, it is challenging to apply the standard of consent for an undistinguished minor, even though the minor has legal personality but lacks the capacity for will. Therefore, consent cannot be obtained directly from the minor, and the consent of the guardians (parents) is required[57]. In this situation, the mother's consent alone is not sufficient; the father's consent is also necessary. This is because the matter is not just about the rights of the pregnant woman but concerns the family as a whole. Hence, the consent of both spouses is a requirement.

However, if the consent of the legal representative of the embryo does not pose a problem for therapeutic medical experiments aimed at preserving the health of the embryo itself or increasing the chances of its survival, issues arise when it comes to experiments conducted on the embryo for the purpose of treating other patients or for purely scientific purposes.

I believe that within the context of experiments for the purpose of treating other patients, it is essential to consider the nature of the experiment itself. If the experiment leads to harm or destruction of the embryo, it should not be conducted, and the consent of the legal representative of the embryo is not recognized. However, if the experiment does not cause harm to the embryo, it can proceed based on the consent of the legal representative.

As for scientific experiments that do not directly benefit the embryo but respond to personal desires, scientific whims, or aim to advance medical sciences, they should not be conducted. Consequently, the consent of the legal representative is not considered regarding such experiments. Nevertheless, it is crucial to regulate these medical procedures that have opened broad horizons for research, discoveries, and beneficial experiments. This necessitates a reconsideration by the legislator who has neglected to regulate the issue of medical experiments on embryos. There is a need to establish legal frameworks to provide necessary protection, especially considering that artificial insemination procedures in Algeria are currently carried out without a specific legal framework to govern and define their guidelines. The extraction of eggs for insemination and freezing is conducted freely in specialized insemination centers, often private clinics, where they set the conditions and procedures for insemination and egg freezing, without any provisions mandating the disposal of fertilized eggs after the fertilization process[58].

CONCLUSION

From the discussion presented on our research topic, we can deduce that medical experiments on living human embryos refer to the research and experimental medical tests conducted by doctors on living human embryos. These experiments vary based on the purpose the doctor aims to achieve. They can be therapeutic, focusing on treating the subjected embryo, such as early diagnosis experiments and genetic engineering trials. Alternatively, they may target treating other patients, including experiments with embryonic stem cells and medicinal embryo experiments. Moreover, these experiments can be scientific, aiming to discover new knowledge regarding diagnosis or treatment, encompassing experiments on gender selection and scientific genetic engineering trials.

The variety of living human embryos that may be subjects for these experiments is notable. Embryos can result from natural insemination, which occurs through sexual intercourse. Additionally, embryos can be produced through artificial insemination, whether internal or external. Furthermore, embryos can be obtained through cloning techniques. Although

[57] Souad Rahli, supra note 21, at p.142.

[58] Sanusi Ben Ouda, Medical Experiments on Humans in Light of Criminal Liability – A Comparative Study, Ph.D. Thesis, Faculty of Law and Political Science, University of Abu Bakr Belkaid – Tlemcen, Algeria (2017-2018), p.185.

parthenogenesis, or virgin birth, is considered a rare occurrence in humans and remains a speculative concept, it is another potential source of embryos.

Regarding the regulation of medical experiments in Algerian legislation, obtaining the consent of the person undergoing the experiment or, in case of incapacity, their legal representative is one of the most crucial conditions specified by the legislator within the provisions of Law 18-11 on health. This consent is essential for the legitimacy of medical experiments, and it is required to be free, explicit, and informed. It must be issued in writing, with the possibility of revoking it and stopping the experiment at any time upon request.

In this context, the issue of the consent of the embryo undergoing the experiment is one of the most important topics that arise, given that these experiments impact its safety. However, the legislator has not taken a clear stance on this matter, merely establishing the general legal basis regarding the necessity of obtaining the consent of the legal representative in case the consent of the individual undergoing the experiment cannot be obtained. This can be considered an indication of the possibility of experimenting on the embryo based on the consent of its legal representative.

Based on the above, the following suggestions can be considered:

-The legislator should intervene to clarify the ambiguity present in Article 386 of Health Law 18-11 regarding the consent requirement in the context of medical experiments. This can be achieved by specifying the individuals who can be subjected to such experiments, defining the legal representative's qualifications, and identifying the types of medical experiments that are permissible.

-It is advisable for the legislator to introduce new legal provisions within the framework of Health Law 18-11, specifically addressing the regulation of medical experimentation on living human embryos. This should include a clear legal stance on this matter, as the general provisions of the current law are insufficient to regulate this unique field.

-The legislator should explicitly determine the qualification of the legal representative of the embryo, whether it is limited to the mother alone or requires joint consent from both parents. Additionally, clarification is needed regarding the status of an embryo resulting from an illegitimate relationship or rape.

-The legislator should intervene decisively to prevent any practice of scientific medical experiments on living human embryos, even if valid consent is obtained from the legal representative.

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