

Ethical Issues Related to Gene Editing with Relevance to Designer Babies

Dr. Reena Kannojiya

*Assistant Professor, Department of Philosophy,
Miranda House, Delhi University, Delhi
E-mail: reena_kannojiya@yahoo.com
reena.kannojiya@mirandahouse.ac.in*

Abstract—Every parent wants to have a perfect baby with perfect health, looks, physic, skills, and an intelligent mind. It's a baby of their desired makeup of characteristics or traits. So that it can compete with a super-smart, super-model or super-human to be one of the best. This dream of parents can become true with the help of gene editing technique. Gene editing is a technique of biotechnology that develops to alter or manipulate DNA (Deoxy ribonucleic acid) sequence for developing desired characteristic in animals but now it is also used in developing human babies with desired characteristics of parents. It is a modern technique of genetic engineering that inspires humans to alter genetic makeup with the help of in vitro fertilization of embryo in lab artificially. This paper will discuss and critically analyze related ethical issues involves in developing

Characteristics or traits of human babies in lab artificially. The related technique needs to be screened for its application on moral grounds so that it can be used for the growth and development of human race rather for that can bring destruction or chaos in society. It is a method that affects potential aspect of future human babies in terms of identity and may create gap in society in terms of success and failure that may lead to develop even a different class. At the other hand it may help in developing more healthy society. Hence this paper with critical ethical issues will also discuss pros and cons of the gene editing that weighs the argument for analyzing whether it serves or benefits the purpose in growth and development of human race.

Introduction

The creation of human beings is a matter of quest and curiosity since time immemorial. It always remains a matter of an intellectual and scientific inquiry that led humans to discover their point of origin and constituent material of which humans are made of. In this field of scientific inquiry breakthrough occurs with the advent of Genetic engineering or Gene editing. Gene editing is a technique of biotechnology that develops to alter or manipulate DNA (Deoxy ribonucleic acid) sequence for initially developing desired characteristic in animals but now it is also used in developing human babies with desired characteristics of parents. It is a modern technique of genetic engineering that inspires humans to alter genetic makeup with the help of in vitro fertilization of

embryo in lab artificially. The nature and targets of research make this field to develop both negative and positive eugenics. Eugenics is an ethics of manipulating human genetics in order to improve population. Its one target is quite fancy in terms of developing perfect or smarter babies of choice with the help of scrutiny of desired genes that leads to desired physical and mental traits by simply altering gene make up. Moreover, according to Wikipedia, The colloquial term "designer baby" refers to a baby whose genetic makeup has been artificially selected by genetic engineering combined with in vitro fertilization to ensure the presence or absence of particular genes or characteristics. The traits which can be changed in designing baby are: Gender, Appearance, Intelligence, Disease, and Personality.

The other target is to relieve humans from pain and suffering of genetic diseases that passes on to one generation to another. There are various genetically linked diseases like cancer and various blood related diseases. The two targets of gene editing in human cells processed in two ways, one with the help of germ line cells reproduction and other on somatic cells, which are responsible for growing specific organ of human body like heart, liver etc. The gene editing is carried out exogenously either with the help of in vitro fertilization or with the help of stem cell or rest of the cells like neurons, skin, liver etc. the matter of concern is that editing in germ cell or sperm cell leads to permanent change or inheritable change in future human generation. Moreover, the alteration in sperm cells or egg cells leads to permanent change in the gene pool or genome of humans. Resultantly, new breeds of humans can be developed.

Historically the attempt to develop perfect human race of Aryans was followed by Nazi's. But it always remembered as negative eugenics because it was carried out by allowing and selecting normal people only for reproduction to develop master race by evolutionary selection. They eliminate weak, feeble minded, physically challenged, homo sexual and abnormal people by death or sterilization. They also killed inferior races like gypsies, Jews, and other minority classes or

races, as Nazi's considered them as undesirable and unfit in achieving genetically superior race. They try to achieve aim of master race by institutionally selective breeding i.e. by deleting defective genes from gene pool subsequently generations become stronger and stronger until master race is developed. Moreover, they believed that can develop designer babies by the removal of undesirable traits from gene pool means removal of physically and intellectually weak people. These historical incidents are evidences of human torture or violence brought about with the help of public social policies like mass killing or euthanasia programs leads to develop negative eugenics. These acts were malefic against humans of particular race or class.

Eugenics

Margaret Sanger highlights the issue of 'fit' and 'unfit'. It leads to raise the question where we can draw a line that can define 'fit' versus 'unfit' class for developing master race. It was considered that those who believe in promoting positive eugenics supports childbearing as 'fit' class and those who promote negative eugenics considered being suppressed or of inferior race or minority as 'unfit' class. The 'fit' class is not just wiping out defective genes in humans but also creating humans with artificial means. It is difficult to manipulate humans as it is consisted of 25000 human genes and each contributes differently in constituting a human. On the other side it may helps in minimizing human pain and suffering but big question is that how we can define 'fit' ones.

However the commonality between 'fit' and 'unfit' is possessing characteristic of 'humanness'. Humanness is best understood as a cluster concept in that it can be equated with a list of characteristics but not with a set of necessary and sufficient condition [1]. These may be including as characteristics:

1. Physical traits and abilities, such as an opposable thumb, bipedalism etc.
2. Psychosocial traits abilities, such as cognition, language, emotional responses, sociality, etc.
3. Phylogenetic traits, such as membership in the biological species *Homo sapiens* [2]

These traits and abilities possess by humans in varied combination depended upon natural selection. These are certain characteristics that define us as humans so it raises question would it be inherently not ethically wrong to alter human form. First of all with advancement of science and technology it is possible to change or alter genetic makeup to change human traits. But if we should do it then against natural law approach. Though natural law to morality implies that altering genetic makeup of human is a kind of tampering hence it is inherently wrong. It argues that humans possess inherent worth so to change its form gene editing is to destroy its worth as it considered to be morally sacred therefore should not altered. For eg. The great monument Taj Mahal has inherent worth so to alter it is to destroy its originality. But

what is inherently wrong in changing human form or traits. It follows with argument that natural selection designed to possess particular traits but if we alter its natural configuration of genes then it would be a kind of intervention in nature's selection because to develop as specie it takes several years to evolve as present age humans. It would be kind of mistake to improve on nature's perfection instead of creating a breakthrough advancement with the help of gene editing or engineering.

In regard with this second argument approaches the issue from theological perspective. In view of this argument it is the god who creates humans with specific genetic makeup rather than by natural selection. So to alter genetic makeup is to challenge the god's wisdom and will. Those who follow gene editing are playing with god and committing mortal sin. It could not be a valid argument for atheists. But it raises a question then why god himself configured us in a manner so that we can reason but not allowed to apply it for human welfare or against injustice to reduce suffering and pain of life? There is no unanimity among theologians against human gene editing. But they cautioned that god has given power to humans for creation so it should be utilized with care [3].

The third argument comes from the side of unborn because certain gene techniques violate the rights of unborn children, which claims to be inherently wrong [4]. The artificial reproductive procedures violate the rights of unborn because they:

1. Are experimental procedures that violates informed consent of unborn children,
2. Deny unborn children the right to have a germ line that has not been genetically manipulated,
3. Deny unborn children a right to an open future [5]

These arguments at one hand raise the question that do unborn children morally have rights? At the other end no moral question arises because informed consent can be obtained from competent parents in interest of child so proxy consent is considered to be legitimate for procedures. Moreover it also construes a controversy in terms of 'rights'. Here rights are taken in two senses – as an interest to fulfill needs and benefits like health, education etc and other as an interest to be born with unadulterated genome with wide range of possibilities and opportunities.

Moral Perspectives

The problem of gene editing or altering also needs to examine in moral perspective in regard with moral theories. In this regard we discuss here three perspectives of morality i.e. Aristotle, Mill, and kant, which imply that there is nothing inherently wrong in altering genetic makeup of humans for good purposes. Aristotle defined Man as 'rational animal' [6]. It implies that man with the help of faculty of reason can make morally rational judgments that can elevate human conditions to lead a better life rather to make it a disaster. These morally

rational judgments exhibit due care, understanding, and well-being. Likewise according to Mill's Utilitarianism, an action is morally right or wrong depends upon the consequences it produced. If it produces desirable consequences then it is good otherwise it is wrong. So, if genetic enhancement produces a good balance in good or bad consequences then the action of genetic enhancement is morally acceptable as per the principle of utility. In contrast with it Kantians object those actions of altering humanness, which attempts to change or violates human dignity and autonomy. In their point of views all genetic interventions are not threatening or harmful for human dignity and respect. Like by using somatic cell technique one can grow hair, skin or other body parts are not threat to human dignity and autonomy while using Germ line genetic engineering to create race of 'slaves' is a serious manipulation or threat to human dignity and autonomy. Therefore all these moral theories suggests that "there is nothing inherently wrong in relation with gene editing as far as moral rightness or wrongness of these attempts depends upon their relation to other moral concerns such as utility, autonomy, natural rights, virtue etc" [7].

All the arguments so far suggest that by altering or manipulating human gene can lead to develop a gene pool in which it is difficult to identify or underline a definition of 'perfect' in regard with human genetic makeup but there are successful medical interventions that ease the life of human in terms of pain and suffering. With the help of gene editing inherited diseases can be given up for all the time to come for future generations. It also helps in providing the chances of survival in case of certain diseases like cancer. Moreover all the genetic interventions carried out with utmost care and discretion to avoid any disaster to human form.

Conclusion

Ethically on the other side of practical ethics the positive eugenics may help in human enhancement while negative eugenics may lead to develop further issues in practicality. It may lead to develop a class of breed which is perfect and intelligent in all respect of life then the people who are produced with natural selection without doing any modification. Hence it creates competition between genetically perfect or modified class of people and natural reproduced people. It further leads to economic issues in terms of affordability of technique only rich class can able to afford it to become either superior or perfect then others. Consequently it widens the gap between rich and poor economically and socially. It challenges the society by falling in gene war.

Pros and Cons of Designer Babies

Pros

- Reduces risk of genetic diseases
- Reduces risk of inherited medical conditions
- Keep pace with others doing it
- Better chance the child will succeed in life
- Better understanding of genetics
- Increased life span
- Can give a child genes that the parents do not carry
- Prevent next generation of family from getting characteristics/diseases

Cons

- Termination of embryos
- Could create a gap in society
- Possibility of damage to the gene pool
- Baby has no choice in the matter
- Genes often have more than one use
- Geneticists are not perfect
- Loss of Individuality
- Other children in family could be affected by parent's decision
- Only the rich can afford it

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