

Bioethicists' Attitude Towards Gene Editing

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Abstract. Gene editing is a controversial technology and there are many ethical issues to worry about and the most fundamental ethical issue is the risk. Relevant data collected from some ethicists who are interested in the gene editing and tend to cautiously criticize Chinese scientist, He Jiankui's first gene editing on a human germ cell for purpose of social responsibility. When it comes to the ethical issue of gene editing, biologists are the first to be consulted, as it involves obscure biological knowledge. This paper present relevant ethical problems and the attitudes of some ethicists towards gene editing. Taken together, this paper gives some analyses of some ethicists' attitudes and it might be helpful to various ethical arguments to the gene editing. Though we all have our own moral intuitions, right and wrong, from the views of ethicists, it will give more exploration the ethical challenges of human society while the gene editing technology may have a profound impact on the future of human beings.

Keywords: Gene Editing, Ethical Issues, Risk, Attitude.

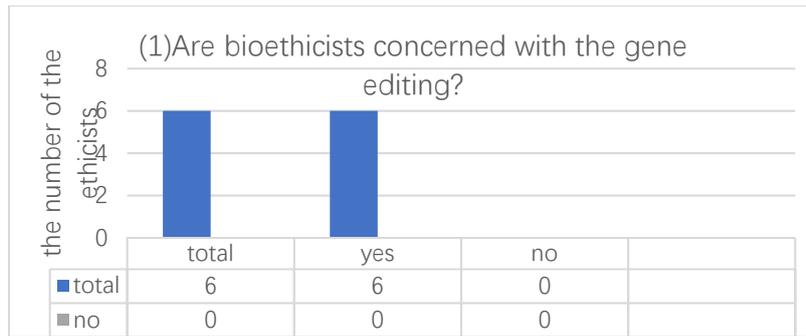
1. Introduction

At the end of November of 2018, Chinese scientist He Jiankui announced the first gene editing on a human germ cell, which led to the birth of two babies. Soon more than one hundred Chinese scientists issued a joint statement to condemn it "crazy". CRISPR gene editing techniques of human embryonic renovation has no difficulty for biomedical scientists. Because of the uncertainty of the misdistance and other huge risks, the global biomedical scientists do not do and dare not to do it. Moreover, the scientific community have reached a consensus on the morality of He Jiankui's specific and individual experiments. [1] First, there are still huge risks associated with CRISPR in humans. Second, HIV has been removed by sperm washing during in vitro fertilization, and gene editing is unnecessary. Third, informed consent is not clear. CRISPR gene editing is a controversial technology and there are many ethical issues to worry about and the most fundamental ethical issue is the risk including technological risk and social risk. These is not any innovation for human science and technology in He Jiankui's gene editing experiment. However, when it comes to the ethical issue of gene editing, biologists are the first to be consulted, as it involves obscure biological knowledge. Though we all have our own moral intuitions, right and wrong, it is necessary to analyze the ethical issues and ethicists attitude towards gene editing.

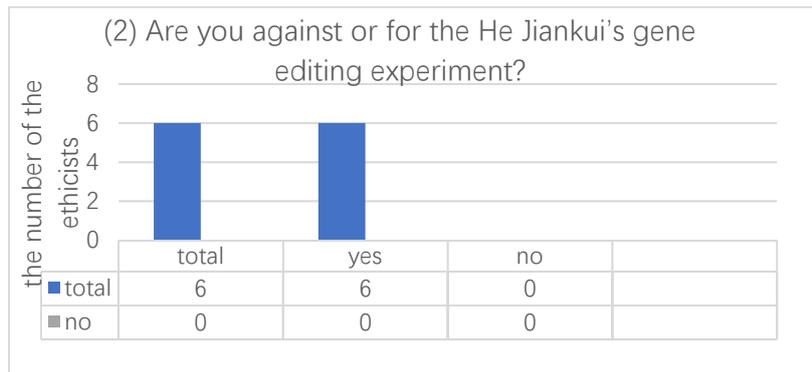
2. Experimental Methods

First, we collect some views from the internet and the journal paper and choose six bioethicists' arguments. The six ethics and philosophy professor are respectively from the life of medical ethics of Fudan University, philosophy department of Huazhong University of Science and Technology, Human medical center of Shandong University, Peking union medical college humanities and social sciences, center for bioethics at the university of New York and Princeton University. Then we design a brief demographic to present their arguments including what they are concerned about the gene editing and what are the special viewpoints from ethical knowledge and practice. Of course, we use a semi-structure design with a list of open questions referring the He Jiankui's gene editing experiment and analyze bioethicists' attitudes and influence. The questions what we need and collect in the survey and the results are as follows:

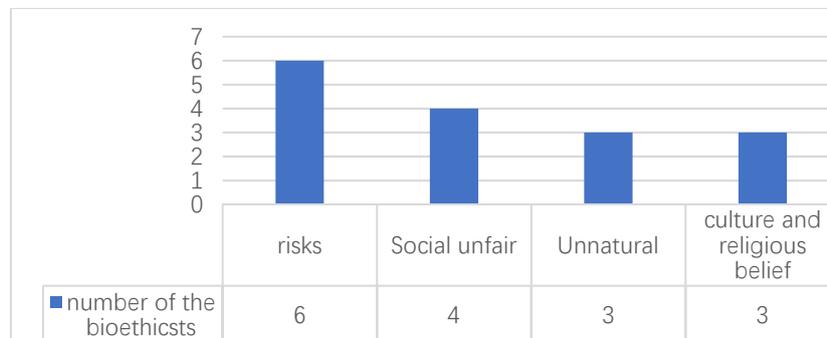
(1) Are bioethicists concerned with the gene editing?



(2) Are bioethicists against He Jiankui’s gene editing experiment?



(3) What are the reasons bioethicists against gene editing?
Risks, Social unfair, Unnatural, culture and religious belief



3. Analysis and Results

3.1 The Viewpoints from Bioethicists Concerned with Gene Editing

Bioethicists think people can distinguish between the empirical world and the moral world. Science is very good at helping us figure out the facts about the empirical world, the sun rises, the earth goes around the sun, and so on. However, in the framework of ethics, the question we study is not about “reality”, but “what we should do”. Ethicists explore “moral facts” and try to define a so-called “moral truth” in the world. How can we say that one person knows a moral fact and another person doesn't? If one saw a man torturing a baby for fun, what would we say to him? We may say, “you shouldn't have done this.” At this point, we make a normative claim which is a moral claim. This moral assertion is a universal one: everyone needs to think in this way, and anyone who doesn't is making a moral mistake.

Ethics is not just about what we intuitively think. People have all kinds of intuitions, many of which are not very reasonable. There are racist instincts, sexist instincts, homophobic instincts, and so on. Moreover, ethics involves reasoning. Many people can't wait to get involved in ethical

discussions, so we can ask them why. Ethicists examine those reasons and see if they are appropriate or relevant to the problem at hand. Ethical issues are complex, so it's a good idea to involve people who are experienced and familiar with ethical arguments.

3.2 Gene Editing and Ethicists' Knowledge

Specialists will need to demonstrate humility, a clear understanding of the bounds of their own expertise and an appreciation of the knowledge, experience and values that members of the public can bring. [2] Ethicists don't have the right to make moral judgments about such a complex technology as gene editing, so no one need listen to the ethicists. But on the other hand, modern technologies like gene editing have a common feature, that is, the uncertainty of technical consequences. We don't yet know what the human, social and natural consequences of this technology will result into. At this point, our choice is not only a technical choice, but a future-oriented value choice. In this regard, ethicists can discuss with scientists and policy makers, reflect on the purpose, means and methods of technology, evaluate technology from an ethical perspective, provide policy makers with some professional advice and advice, and play a role in forming social consensus.

Gene editing involves a lot of important distinctions. Bioethicists make these distinctions before discussing them. One of the most important differences is somatic gene editing and germ cell gene editing. The former edits genes in adult cells, while the latter edits genes in germ cells, thereby passing the genes on to future generations. Somatic gene editing therapy is not significantly different from any other type of therapy. While there are many scientific unknowns and risks and the benefits are considerable. Gene editing in germ cells is a different matter, requiring more consideration. There are all issues to discuss faced by other cutting-edge technologies.

3.3 Gene Editing'S Ethical Issues and Bioethicists' Arguments

There are all issues to consider, which are not very different from the problems faced by other cutting-edge technologies. The first ethical issue all the bioethicists worry about gene editing is risk. There are two kinds of risks. One is "off target", where you change X and end up changing Y, or a bunch of other genes. To solve this problem, scientists can measure the number of "misses". By modifying genes, they can reduce the incidence of cardiomyopathy. But there's another risk: after changing the human genome, you think there's nothing wrong with it, and it looks like there's nothing wrong with it, but over the years, after extensive inheritance, the problem starts to emerge. Bioethicists believe that on the genetic level, people are different, including IQ is also different, will have some impact on the future, but this is not the final determination. To be sure, any powerful technology is at risk of being abused. At this point, bioethicists are not in favor of using gene editing to enhance any human ability, because gene editing technology is not safe enough at present.

Moreover, gene editing will aggravate social inequality. The factors determining a person's development and social equity, in addition to the individual's innate conditions, also include the individual acquired moral character, education, environment and social system arrangements. Perhaps there will be a market for gene editing in the future, where the rich will have easier access to the technology. The data above show that nearly 67% percent of the bioethicists think they are likely to emerge. The only hope is to try to use it in a moral way.

Though it can bring some interests and as humans we should accept the randomness of natural inheritance. But we know that random inheritance produces many deadly diseases and afflicts some people. Bioethicists believe that the human genome is sacred and should not be modified. So we should pay attention to the unnatural and religious issues of gene editing, therefore, they emphasize that gene editing turns human reproduction into human manufacture, which reveals a kind of arrogance of "people against the gods".

4. Summary

From the analyses above, it is obvious that bioethicists pay attention to the ethical issues of gene editing. From the viewpoints from risks, social unfair, unnatural and religious belief, bioethicists think

they face with the inevitable responsibilities. When people do nothing, they feel comfortable and thankful that they have cleverly avoided choice. In fact, to take a very crude example, suppose you could let your child learn multiple languages through gene editing. Would you do that? If you refuse because you think it is best for your child to speak only one language, then you have made a choice.

References

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