Research on The Legal Path of Female Egg Donation in China under The Background of Low Fertility Rate

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Abstract. With the fertility rate declining yearly in China, egg donation has become a meaningful way to solve people's infertility and improve fertility. However, more laws and regulations on egg donation behavior norms and constraints must be more relevant. Promoting the legalization of egg donation in China and establishing a standardized national unified egg bank can help infertile parents reproduce through reproductive assistance technology and improve the national fertility level. Through literature review and summary, this paper found that there are ethical and moral risks, lack of reasonable supervision, and the egg donation platform has yet to be fully established in China. Therefore, it is necessary to establish and improve the relevant legal management system of egg banks and carry out more standardized and strict supervision and legal regulations on the specific procedures of egg donation, egg use, egg collection, and egg freezing. The public welfare of voluntary egg donation should be publicized more to reduce the possibility of commercial egg donation and egg freezing. Pay attention to the construction of egg banks, conduct data statistics, prevent the occurrence of inbreeding, protect the privacy of egg donors more comprehensively, and provide encouraging economic compensation to egg donors; Finally, the physical and mental health and safety of egg donors should be guaranteed to reduce the risk of egg donation.

Keywords: Low fertility; Egg donation; Legalization; Egg banking; Ethical risks; Laws and regulations.

1. Introduction

Since the 1970s, the total fertility rate has been on a downward trend. Since the 1990s, China's fertility rate has fallen below the replacement level and continued to decrease. After the implementation of the two-child policy, the fertility rate recovered a little, but after a while, the effect of the policy dissipated and the fertility rate continued to decline. According to the data released by the National Bureau of Statistics, China's birth population has been declining for four consecutive years, from 18.83 million in 2016 to 12 million in 2020, with an average annual decline of 1.703 million people[1]. Meanwhile, according to the results of the 7th census, the total fertility rate in 2020 is only 1.3, which is the lowest in history and falls into the extremely low fertility rate classified by international academia [2].In order to alleviate the low fertility rate, egg donation has become a topic of research for many scholars, but the current laws and regulations on egg donation are in a blank stage. How to promote the legalization of egg donation in China and establish a standardized national unified egg bank has become the key.

Egg donation, also known as egg donation, refers to the process in which a third party egg donor donates her own eggs to a woman who cannot obtain or use her own eggs due to ovarian reserve failure or other genetic diseases through assisted reproductive technology, and the sperm of her husband is fertilized in vitro to form embryos and then transplanted back to the uterus of the woman [3]. In 1969, British scientist Edwards realized the first human in vitro fertilization process, which was a great breakthrough in human assisted reproduction research [4]. The world's first test-tube baby was born in Britain in 1978, the study found. Subsequently, the world's first baby was born in Australia in 1983, but due to the thawing of eggs and the low fertilization rate, this technique was not widely used for another 20 years [5]. The use of donated eggs and embryos now accounts for 18 percent of all IVF births in the United States.

At the same time, egg donation also brings a series of ethical, moral and legal problems [6]. In order to deal with these problems, the British Parliament established the HFEA in 1990, which became the world's first specialized licensing and regulatory body in the field of human assisted

reproduction [7]. Opinions and attitudes towards egg donation vary widely from country to country. In some countries, such as Italy, Germany and Austria, egg donation is illegal; In some countries, it is legal only if the woman provides her eggs anonymously without compensation; In Canada, only non-anonymous, uncompensated donations can be made legally. In some countries, including Spain, South Africa and the Czech Republic, only anonymous egg donations are legal. The United States has the most liberal legal policy regarding egg donation, as it can be anonymous or non-anonymous, whether it requires compensation or unpaid donation [8]. According to the research statistics, from 1990 to 2020, egg donors have a high satisfaction with their egg donation experience and evaluation, and many of them are willing to donate eggs again [9]. At the same time, the maturity of other assisted reproductive technologies also laid a foundation for the further popularization of egg donation surgery. There are now a large number of IVF centres built around the world and it has become a routine technique in many hospitals. According to the statistics in 2011, more than 4 million test-tube babies have been born worldwide [10]. In addition, people continue to carry out research and practice of egg freezing surgery. In 1986, the first practical egg freezing technology was successfully applied. Subsequently, Israel approved egg freezing for clinical treatment in early 2011, and the American Society for Reproductive Medicine approved egg freezing experiment in 2012 [6]. Singapore will also open social egg freezing in 2023 [11].

With the advent of vitrification freezing technology, the potential damage to the internal structure of the egg is reduced and the success rate of egg thawing and fertilization is increased. After that, a series of controlled experiments showed that the success rate of pregnancy results after IVF using vitrification frozen eggs was comparable to that of fresh eggs [12].Reproductive assistance technologies are maturing and there's in vitro fertilization, which involves conventional in vitro fertilization -- embryo transfer [13]. Preimplantation genetic diagnosis Preimplantation biopsy and genetic analysis are performed on embryos of patients with genetic risk, and embryos without such genetic diseases are implanted into the uterine cavity to obtain normal fetuses, which can effectively prevent the birth of children with genetic diseases [14].In China, public medical institutions can carry out test-tube surgery independently, which lays a foundation for egg donation and related work.

But with the global fertility rate declining, there is a huge demand for eggs, and infertility patients account for more than 15% in China. Compared with the fifth and sixth census data, the number of women giving birth between 30 and 34 years old increased from 28.62% to 45.84%, and the number of women giving birth between 35 and 39 years old increased from 6.22% to 18.71%[15]. Studies have found that the money and energy costs of raising children are far beyond the affordability range of contemporary young people, so most young people aged between 20 and 30 are not willing to raise children without financial independence [16]. Secondly, the demand of pregnant women whose only child died and missed the optimal childbearing period is also increasing [17]. Especially after experiencing a huge shock, relatives may suffer from traumatic sequelae, resulting in the emergence of long-term mental disorders [18].However, the fertility of older women will decrease, which is manifested by the reduction of oocyte quality and endometrial receptivity, etc., which result in the increasing demand for eggs.

At present, egg donation is not legalized in China, and there are a series of risks. Studies have shown that in some illegal establishments, egg sellers take drugs to induce ovulation. This non-physical behavior can come with a host of side effects, such as liver and kidney failure due to high hormone levels in the body, or tubal infertility due to bleeding infections. Overuse of ovulation drugs may also increase the risk of cancer. Even in regular hospitals, egg donors are at increased risk of breast cancer, endometrial cancer, and loss of fertility [19].Secondly, under the background of traditional Chinese culture, the connection and continuation of family blood ties are highly valued, and the recognition of egg donation varies among all social strata. Women who choose to donate eggs will face certain pressure of social public opinion. Some egg donors will think about the consequences of egg donation, such as whether the child's family is happy or not, whether the birth of a child is correct, etc., resulting in long-term psychological problems such as anxiety [20]. Some scholars have also found that once eggs become donable goods, it will lead to the separation of fertility and family

connection, break the natural law of sexual intercourse and fertility and the structure of traditional family model, resulting in the conflict between biological parents and sociological parents. Giving and receiving eggs also give couples the opportunity to choose the offspring genes, and the deliberate pursuit of excellent genes will violate the natural law of the natural development of life and the moral code of life equality [21]. As a kind of reproductive aid, egg donation has appeared in the history of human beings for a short time. Although the current technology can support the relevant surgery, the psychological and physical harm it brings to women, as well as the potential dangers it brings to social morality and ethics, make it difficult to legalize egg donation in China. Therefore, by summarizing and combing the existing literature, this study found the risks in the process of egg donation and the feasible path of legalization, providing reference for the legalization of egg donation in China.

2. Current situation of egg donation in china

2.1 Increasing Demand for High-Quality Eggs

Today's Chinese society is developing rapidly, and modernization is accelerating. Affected by many factors, such as the decline in overall physical fitness, the high pressure of daily work, late marriage, and childbirth, China's marriage and fertility rates continue to decline, and an increasing number of people have infertility. According to the survey, the rejection of marriage has become stronger among young people in the past decade, and only 7.6 percent of young people have a positive attitude toward having children. Up to 29.4% of young Internet users have a significant avoidance and resistance attitude toward childbearing and clearly express that they do not want to have children in the future [22]. Currently, 10% of Chinese women of childbearing age have infertility, and the proportion of infertility is as high as 15% in male patients [23]. That means that nearly a million infertile people yearly rely on reproductive assistance technology to have children, representing a large egg market. Nevertheless, more than the supply of eggs is needed to satisfy the existing market. Eggs are precious. An ordinary woman ovulates only about 400 eggs in her lifetime, and only women in their 20s and 30s have the best eggs. According to statistics, only a few hundred infertile people in China who need ovulation donation yearly can receive ovulation donation. 85% to 95% of women who need donor eggs for fertility cannot obtain treatment due to a lack of donor sources [24].

2.2 Gradually Increasing Acceptance of Egg Donation

With the delay of marriage and childbearing age, women's demand for assisted reproductive technology is gradually increasing. Egg donation is an assisted reproductive technology that has been gradually known and accepted by people. The pregnancy rate and live birth rate using donated eggs are higher than that using patients' own eggs, which provides some infertile patients with excellent opportunities to obtain pregnancy and live birth [25]. Since 1982, when the first test-tube baby was born in Gothenburg, Sweden, legal egg donation has been opened in several countries, such as the HFEA egg sharing system in the UK and commercial egg donation in the US [26]. A Swedish study showed that 17% of people of appropriate egg donation age were prepared to donate eggs, 39% were opposed and 44% were skeptical [27]. A British survey found that one-third of 349 women with an average age of 27 were willing to accept a non-anonymous egg donation [28]. In a US study of students, more than 23% of respondents were willing to donate eggs [29]. At the same time, the popularity and support of egg donation in China is also gradually improving. About 25 percent of women have thought about donating eggs, and more than one in five men said they would support their partners or family members to donate eggs. With the development of science and technology and the opening of social atmosphere, people began to accept various reproductive assistance technology gradually.

3. Obstacles to the legalization of egg donation in china

3.1 Ethical and Moral Risks of Egg Donation

First of all, egg donation will break the traditional family concept. One of the most important ideas in Chinese traditional culture is "there are three kinds of unfilial piety, and no offspring is the greatest". Through reproductive assistance technology, sexual reproduction is no longer a necessary factor for the family to complete the continuation of life. This non-traditional reproductive mode will inevitably bring chaos to social and family relations [21]. In the process of egg donation, the egg is provided by a identified third party, but it is not certain whose sperm it is combined with: it may be combined with the wife's partner or with the sperm of a third party. Moreover, it is uncertain whether the egg and sperm combine to form a fertilized egg that is conceived and delivered by the wife or by someone else. As a result, children may be born with multiple parents, including genetic parents (sperm and egg providers), birthing mothers (womb providers) and sociological parents (nurturing parents). This makes it complicated and difficult to identify the legal parents of the children conceived by egg donation, and the national marriage law does not stipulate how to identify the parent-child relationship under such circumstances. The identification criteria of legal parents under human reproductive assistance technology include: whether the husband and wife have informed consent, whether the egg/sperm provider is willing to only help others to have children without taking the legal responsibility for the birth of children, and whether the marital relationship between the husband and wife continues to exist during the implementation [30]. However, it is undeniable that egg donors may go back on their word and compete with the parents for the children in the future, which also increases the complexity and instability of legal parental identification [31]. On the other hand, women take huge risks during the egg retrieval process, such as the need to take ovulation inducing drugs to perform the surgery, which can have a series of after-effects. This involves important ethical issues such as women's human rights and humanitarian protection for women [32]. In addition, artificially fertilized eggs require multiple eggs to be fertilized, but only one or two eggs are eventually implanted in the uterus, and the excess is discarded. This has also caused controversy among ethicists. Fertilized eggs belong to the category of "person" in the biological sense[33]. In addition, if egg donation is not legalized, it is easy to appear the phenomenon of commercial egg trading, and women's bodies will continue to be used to create commercial value, which greatly damages women's human rights.

3.2 Lack of proper regulation of egg donation

Egg donation is extremely complex, requiring a clear division of rights and responsibilities and strict supervision of the industry. However, there is no standardized egg bank in China, illegal egg trading is repeatedly banned, and relevant laws and regulations are not perfect. First, legislation is lacking. Although regulations prohibiting the commercial sale of ovum have been formulated and implemented in the health sector, the legal level of these regulations is low and their effectiveness is limited. In addition, the regulation only legally restricts the sale of eggs by public hospitals and their medical staff, and has no binding effect on the sale of eggs by institutions and individuals other than public medical institutions. Since illegal organizations that sell eggs are not registered with the Ministry of Commerce and industry, they can only be punished as illegal business [24]. Egg donation is extremely complex, requiring a clear division of rights and responsibilities and strict supervision of the industry. However, there is no standardized egg bank in China, illegal egg trading is repeatedly banned, and relevant laws and regulations are not perfect. First, legislation is lacking. Although regulations prohibiting the commercial sale of ovum have been formulated and implemented in the health sector, the legal level of these regulations is low and their effectiveness is limited. In addition, the regulation only legally restricts the sale of eggs by public hospitals and their medical staff, and has no binding effect on the sale of eggs by institutions and individuals other than public medical institutions. However, since the illegal ovum trading institutions have not registered with the industrial and commercial authorities, they can only be punished as illegal operation at most.

Secondly, law enforcement is weak. Many commercial platforms openly advertise ovum trading, but in reality, few departments manage and punish the "ovum market". In addition, egg extraction surgery has certain risks, requiring practitioners to have the corresponding professional ability and professional ethics. According to the regulations of public medical institutions in China, egg donors are required to carry out relevant health examination and management according to the screening method of sperm donors, fully inform the parties concerned of the medical risks and require 100% follow-up of clinical egg donation. The absence of official institutions has allowed underground egg sellers to survive, which are difficult to regulate effectively. At the same time, since most commercial egg donors do not want their identities to be revealed and choose to donate eggs anonymously, there may be social problems such as inbreeding and confusion of relatives [12]. These social problems are rooted in the absence of relevant laws and regulations.

3.3 The egg donation platform has not been fully established

In China, public medical institutions impose strict restrictions on egg donation and offer low remuneration, leading most people to choose commercial egg freezing and egg selling, so that underground egg freezing and egg selling institutions can survive and develop. From a legal point of view, China only allows therapeutic freezing and egg donation by public medical institutions, and only allows married and infertile citizens to receive egg donation. If Chinese women want to freeze their eggs to ensure the quality of their eggs and maintain them in optimal fertility conditions, there is currently no support from legal, public medical institutions. This means that others are unable to freeze or donate their eggs in public hospitals and have to go through underground, illegal medical facilities [12]. At the same time, some scholars believe that the Code of Human Assisted Reproductive Technology issued by the National Health Commission is only applicable to medical personnel in medical institutions as a professional code, and is not legally binding, so it is not applicable to ordinary citizens. In addition, the source of eggs has been in short supply since legitimate medical institutions only accept donated eggs from patients treated by the hospital, and many families in need often wait for years without obtaining suitable eggs. In particular, most of the families willing to accept the egg donation always have special requirements, such as height, appearance, gender and even education, which cannot be met by the current technical level and procedures. This has led to a large number of families in need opting for commercial surrogacy, which is not fully established. But commercial surrogacy also has a host of social problems. As the industry has been in a legal gray area for a long time, lacking industry norms and supervision by professional organizations, it is in a state of self-destruction, and the necessary procedures and safeguards in many egg donation behaviors are not perfect [12].

4. Analysis on the legal path of egg donation in China

4.1 Establish and improve the egg bank related legal management system

The state should establish a special organization to supervise the operation of egg bank. Institutions should carry out regular special inspections of public hospitals and medical institutions in the market according to law, and punish all dereliction of duty of illegal egg selling and medical personnel who do not perform egg donation operations in accordance with the prescribed procedures. In view of the existing administrative rules and regulations on assisted reproduction are of low rank and limited scope of application, a unified artificial assisted reproduction law should be introduced. In view of the illegal egg selling institutions for the purpose of profit, relevant charges should be set in the Chinese criminal law, such as the crime of organizing egg trading, the crime of publishing and trading egg information, and the crime of intentional injury. Secondly, egg users should be restricted from applying for the use of eggs. Only those who are truly infertile can apply for the use of eggs, and their mental and physical qualities should be evaluated[3]. For egg donors, strict health checks should be carried out to prevent the spread of disease or any physical defects. At the same time, egg donors may have a certain chance of psychological problems after egg donation. Therefore, the egg bank should

establish corresponding psychological counseling institutions to help egg donors solve possible psychological problems in time. As egg donors, due to the lack of relevant medical knowledge, may not be aware of the process of egg collection and possible risks. At this time, the egg bank staff should explain the relevant medical knowledge and risks in a timely manner to prevent any possible risks during the egg collection process[34].

4.2 Multi-directional publicity of voluntary egg donation for public welfare, put an end to commercial eggs

Relevant departments should actively communicate and cooperate with the public media, especially regular newspapers, community publicity boards and TV public service advertising channels, increase the positive publicity of egg donation, convey the public welfare and importance of egg donation, and let the public accept egg donation and the people who donate egg and change their concept, which is the fundamental premise for solving the problem of egg shortage[35]. At present, the ovum donors in the egg market are mainly female college students, who lack knowledge of ovum trading and do not understand its significance for infertility patients, and are often driven by profits to sell eggs. In order to deal with this situation, egg regulators should organize public activities such as lectures and academic forums in high schools, universities and communities to let them know about the dangers of selling eggs in illegal institutions and prevent them from going astray. To introduce the seriousness of the current social infertility situation to female college students and women of appropriate age for egg donation, promote the public welfare significance of egg donation, with "dedication" and "health" as the main line of publicity, so that they can feel the sense of honor of egg donation, voluntarily donate eggs to the legal egg bank[36].

4.3 Attaching importance to egg bank construction and protecting volunteers' privacy

First of all, on the basis of ensuring the health of women and voluntary donation, the country should establish a unified egg bank and provide incentive financial compensation to women who voluntarily donate eggs[37]. Especially for the volunteers with poor economic conditions and far away from the donation site, the transportation subsidy will be increased. In view of the particularity of egg as the origin of life, in order to minimize the impact of egg donation on the lives of volunteers, it is suggested to promote relevant laws and regulations in the field of assisted reproduction with reference to the regulations of China Special Administrative Region[38], we will promote the establishment of a national egg data information database to control multiple egg donations by the same donor[39]; actively clarify the judicial interpretation of the privacy protection of egg donors; Egg organizations can encourage volunteers to choose to leave their own non-identifying information, and with the volunteers' knowledge and consent, establish a family profile of more than three generations[40], the information will be shared with the recipient's child after the child becomes an adult to prevent inbreeding[26]. In addition, egg banks should strictly control the quality of donated eggs, and strict medical and genetic tests should be conducted when screening egg donors to ensure that they have no family or personal history of genetic or infectious diseases. In order to ensure the healthy growth of children, the egg bank should keep confidential the information of egg donors and the privacy of infertility patients. Meanwhile, the goal of the egg bank should be to help infertility patients and families who have lost their families to have children, not for profit[34].

5. Conclusions

This paper analyzes the current situation of egg donation, including egg demand and public acceptance of egg donation, and analyzes the feasibility of legalizing egg donation from technical, moral and legal aspects. Then it points out the existing problems and risks of egg donation in the current society, such as the lack of supervision of the egg donation process, the lack of specific laws and regulations and the possible ethical and moral problems. Then, according to China's national conditions and laws, it puts forward reasonable and specific implementation methods, including:

establishing and improving the relevant legal management system of egg bank, and carrying out more standardized and strict supervision and legal regulations on the specific procedures of egg donation, egg use, egg collection and egg freezing; The public welfare of voluntary egg donation should be publicized in more aspects to reduce the possibility of commercial egg donation and egg freezing. Pay attention to the construction of egg bank, conduct data statistics, prevent the occurrence of inbreeding, protect the privacy of egg donors in a more comprehensive way, and provide encouraging economic compensation to egg donors; Finally, the physical and mental health and safety of egg donors should be guaranteed to reduce the risk of egg donation.

6. Limitation

Due to the current restrictions on egg donation in China and the sensitivity of the topic of egg donation in China, there are few literatures and data for reference in this paper. Moreover, due to the different national conditions and unequal information outside China, the comparison with the current situation outside China is not comprehensive enough. For a long time, some scholars only focus on discussing the technical development, ethics, social culture and legal issues of egg donation, but only raise questions without answering them, and lack discussion on the feasibility and specific implementation methods of the legalization of egg donation. However, the summary and future outlook of this paper can lead to a series of relevant important discussions and extend the feasible approach.

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