

Running title: Surrogacy; legal and ethical challenges Evaluation of the medical, legal, and ethical considerations of Surrogacy

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ABSTRACT

Introduction: Based on the World Health Organization (WHO) report, about 17.5% of the world population experiences infertility. Some assisted reproductive methods for addressing infertility are well-established, and donation is one such method. Surrogacy, a form of donation, provides an option for parents facing various reproductive challenges to have children. Various countries, based on their culture, beliefs, and socioeconomic status, use two main types of surrogacies: traditional and gestational. We conducted a comprehensive search induced in PubMed, Scopus, and Web of Science from 2000 until 2024 with keywords including "surrogacy," "legal, and "ethic" done. All results were screened, and appropriate texts were included in the study. While some countries have legislation covering one or both types of surrogacy, others have made it illegal. In this study, we analyzed the legal status of surrogacy in 28 countries from five continents. In addition to examining the legal frameworks, we explored the ethical challenges associated with surrogacy. These challenges included risks related to delivery and pregnancy for the surrogate, exploitation, autonomy issues, psychological problems for all parties, the sense of confusion and disparity experienced by the child, child rights, intra-familial sex cell donation, and gender discrimination. These problems can have detrimental effects on surrogacy practices, potentially reducing the effectiveness of this reproductive method. Thus, there is a pressing need for international regulations to address these issues, mitigate risks for surrogates and intended parents, and reduce disputes among all parties involved.

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Introduction

Infertility refers to "the failure of a couple to conceive after 12 months of regular, unprotected sexual intercourse" [1]. According to the World Health Organization (WHO), approximately 17.5% of the global population experiences infertility. The prevalence of infertility varies among high-, middle-, and low-income countries, with higher rates observed in high-income countries. Infertility is an issue that is increasing annually and is of growing concern for health policymakers globally. In the context of human social life, the family is one of the most important pillars of every individual's life. Thus, one of the critical concerns for couples is the

ability to reproduce. The inability to do so can lead to a series of problems such as depression, stress, and other mental health issues [2]. Medical sciences have made many advances so far, which have provided many services in the field of infertility and the treatment of couples with fertility problems. Assisted reproductive methods include drug treatment, surgical procedures, intrauterine insemination (IUI), in Vitro Fertilization (IVF), intracytoplasmic sperm injection or microinjection (ICSI), and donation [3-8].

In the donation method, various subtypes including surrogate uterus, embryo donation,

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ovum donation, and sperm donation are utilized [8, 9]. One of the effective actions for infertile couples is due to surrogacy [10]. Surrogacy is used when pregnancy is impossible or the mother and fetus have risks [11]. It is a method of assisted reproduction where problems with the sex cells of both the husband and wife do not exist. However, for various reasons, including the inability to carry the fetus and the absence of a uterus in the wife—whether congenital or acquired—pregnancy may be dangerous for the wife if she is suffering from diseases such as autoimmune disorders, diabetes, heart diseases, or cancers that threaten the life of the mother and, in some cases, the life of the child [12]. In this method, the husband and wife fertilize their sex cells together in a laboratory setting and implant them in a third person's uterus. Statistics show that surrogacy contributes to 1.9% of annual births in the United States among all assisted reproductive technologies [13]. The focus here is on gestational surrogacy. We further discuss two types of surrogacy: gestational and traditional [14]. Given the legal challenges surrounding surrogacy, it is essential to address the ethical issues associated with this reproductive assistance method. Therefore, we must resolve the ambiguities surrounding surrogacy and its implementation models by discussing the legal and ethical challenges.

Methods

In order to maintain scientific rigor, we executed a three-step organized methodology consisting of (1) finding pertinent data to guide the methodological framework, (2) constructing a thorough methodological framework, and (3) validating, testing, and improving the framework [15].

In the first step, we designed a detailed outline for the manuscript. To ensure a comprehensive review, we conducted a comprehensive search in PubMed, Scopus, and Web of Science databases. Our search strategy was designed to be inclusive, using broad keywords such as “surrogacy”, “legal”, and “ethic” with their MeSH synonyms. The search was limited from January 1, 2000, until January 1, 2024. The search results were then screened through a rigorous process involving title, abstract, and full-text reviews. In addition, legal regulations of each country are extracted from their legislation. The studies were further assessed for their methodological rigor, including an evaluation of potential biases and limitations in their designs. This study aims to address the following research questions: (1) What is the status of surrogacy regulations in various countries? (2) What are the ethical considerations of surrogacy for intended

parents, surrogates, and children.

3. Why surrogacy?

In society, many women are at risk of being pregnant. Among these cases, there are underlying diseases in women, such as cancer, metabolic, and congenital diseases. On the other hand, pregnancy may be prohibited in some women, such as people with infectious diseases that are transmitted to the fetus in case of pregnancy, or they refuse pregnancy for personal reasons and beliefs. In such a situation, medical science comes to the aid of these people with assisted reproductive methods [16, 17]. Therefore, the purpose of this assisted reproductive method is to meet the needs of couples by having children and supporting the population's youth.

4. Genetic relations

In couples with fertility problems, there are various methods of assisted reproduction, such as egg donation, sperm donation, surrogate mother, and surrogate ovum donation. Figure 1 illustrates two types of surrogacy patterns within a family tree.

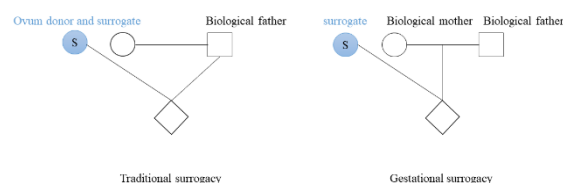


Figure 1. Surrogacy in a Family Tree

5. Surrogacy and its subtypes

In the event that the mother is unable to keep the child, there are two alternative womb methods. The full gestational surrogacy method entails obtaining the embryo from the couple's sex cells and implanting it in a third person's uterus, whereas the traditional method, also known as traditional surrogacy, uses a third party's sperm and egg, with the third party (womb donor) inheriting half of the embryo's genes [18]. Statistics from 1999 to 2013 show that total uterine replacement resulted in 30,927 births [13]. In the history of surrogacy, the first legal contract was drawn up by Noel Kane, an American lawyer, in 1977, and the first successful example of full gestational surrogacy through IVF was reported by Utian in 1985 [19]. After several years, the California state court declared surrogacy agreements legal in 1996, marking the beginning of legal surrogacy in the United States of America.

5.1. Gestational surrogacy

Since the fertilization cells are the sex cells of couples, genetically, the fetus inherits the genetic traits of these two individuals. Social parents are similar to biological parents, but they differ in that the biological mother of the fetus was unable to care for the child, leading to the use of a third person for conception [12, 20].

5.2. Traditional surrogacy

This method of surrogacy eliminates the mother's involvement in ovum cell production, as the ovum cells originate from the surrogate, who is essentially the fetus' biological mother [21]. Figure 2 illustrates the difference between gestational and traditional surrogacy.

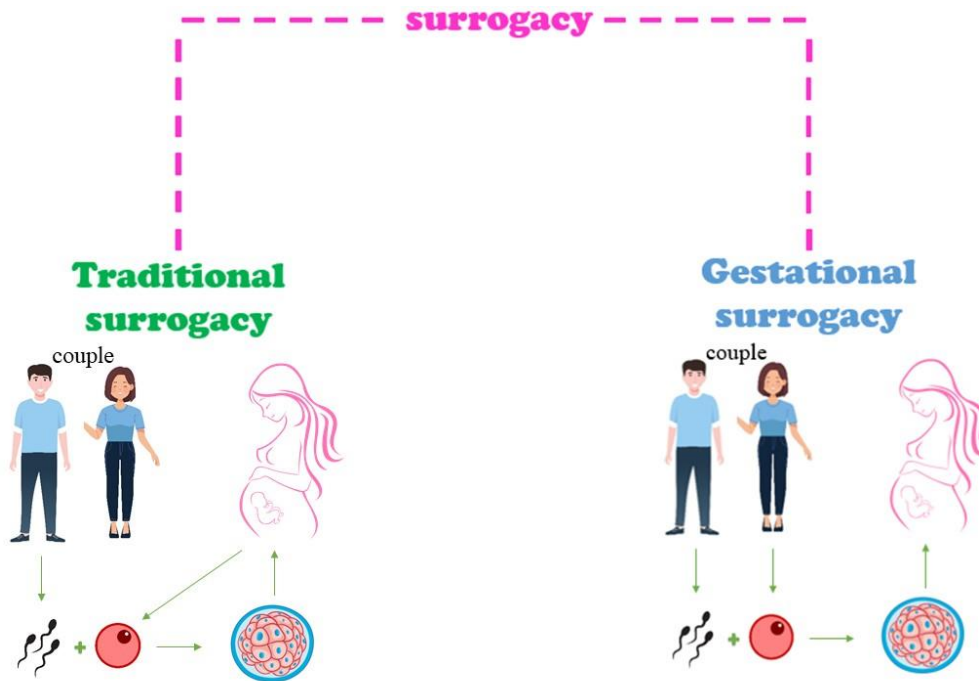


Figure 2. Schematic difference between gestational and traditional surrogacy

5.3. Inheritance of traits

In both kinds of surrogacy, the father provides half of the genetics of the resulting egg cell. However, in the traditional method, the other half of the genetic material comes from the third person (ovum donor), and in the gestational method, the other half of the genetic material reaches the fetus from the wife. As a result, in the traditional method, the third person (ovum donor) and in the gestational method, the wife is known as the biological mother of the child [21, 22].

6. Commercial or non-commercial surrogacy? Difference between beliefs and rules

Without judgment about the ethical implications of this practice, surrogacy is considered commercial when a surrogate mother receives compensation from the intended parents for carrying their baby. National laws and individual circumstances guide

the decision to pursue commercial surrogacy, as there are no specific international regulations for this field [23]. Some argue that commercial surrogacy dehumanizes women by reducing them to mere vessels for childbirth, while others believe it provides an opportunity for exploitation or raises risks of human trafficking. Despite these concerns, commercial surrogacy is conducted with the mutual consent of all parties involved, without undue pressure from any side.

In the following, we will examine the laws and beliefs surrounding commercial surrogacy in different countries.

Borderline between commercial and non-commercial

Some view commercial surrogacy as exploitative but argue that its alternatives may be more harmful [24, 25]. Both commercial and non-commercial

surrogacy may involve compensation for treatment, sick leave, and food, thereby blurring the distinction between them. It can be challenging to distinguish between commercial surrogacy, which requires payment, and non-commercial surrogacy, which provides compensation without any obligations [26].

7. Different countries, different laws

Africa

In some African countries, there are no specific laws regarding surrogacy. In sub-Saharan Africa, the lifetime prevalence of infertility is about 9.3-15.8 percent [27], and around 32 percent in Southern Africa [28].

South Africa

Act 38, Chapter 19 of the Children's Act, legislated surrogacy in South Africa in 2005 and put it into effect in 2010. The court must grant permission before implementing surrogacy, and performing IVF without this approval is illegal. The intended parents become the legal parents of a child born through gestational surrogacy [29].

Nigeria

Nigeria currently has no specific legislation on surrogacy. However, Rule 23 of the Code of Medical Ethics permits gestational surrogacy. Like South Africa, only altruistic surrogacy is allowed in Nigeria [30].

Ethiopia

Ethiopia also lacks specific regulations on surrogacy. In Ethiopian law, the mother is defined as the woman who gives birth to the child, even if she is not genetically related to the child. There are no specified penalties for involvement in surrogacy [31].

America

Based on the population of this continent, we have analyzed three countries with the largest populations in this section.

United States of America (USA)

The United States is a leader in codifying laws for assisted reproductive technologies. Surrogacy began in the USA in the 1980s [32]. In most states where surrogacy is legal (except New Jersey and North Dakota), both gestational and traditional surrogacy are practiced, with gestational surrogacy being more common [33]. By 2021, the prevalence of gestational surrogacy had quadrupled since 1999. Studies show that commercial surrogacy is explicitly legal in 16 states and implicitly legal in seven states, while it is

prohibited in five states [34]. Surrogacy for foreigners is available in states where it is legal.

Brazil

Commercial surrogacy is forbidden in Brazil, and the surrogate must have a prior relationship with at least one of the intended parents [35]. Additionally, surrogacy in Brazil is regulated by the Federal Council of Medicine. Unfortunately, some gaps in the regulations have created difficulties for implementing surrogacy in the country [36].

Mexico

Although assisted reproductive techniques have been used in Mexico for about four decades, only two states have legislated surrogacy laws. Regulations regarding surrogacy have not yet been established at the national level [37, 38].

Asia and Oceania

Saudi Arabia, the Islamic Republic of Iran, and the United Arab Emirates

Iran lacks codified laws specifically addressing surrogacy, and there are no restrictions on commercial surrogacy. The Guardian Council approved a law in 2014, allowing all specialized infertility treatment centers to perform appropriate treatment measures for couples under the specified terms and conditions. The Islamic Republic of Iran cites Article 167 of its Constitution to address the lack of specific legislation on donation methods in infertility treatments. If he fails to determine the verdict by citing authentic Islamic sources or authentic fatwas, he can issue a ruling on the case. However, he cannot refuse to investigate the case and issue a ruling under the pretext of silence, defects, abridgement, or conflict with codified laws. The judge must endeavor to locate the verdict of each lawsuit within the codified laws. If he fails to determine the verdict by citing authentic Islamic sources or authentic fatwas, he can issue a ruling on the case. However, he cannot refuse to resolve the case and issue a ruling on the pretext of silence, defects, abridgement, or conflict with the codified laws. Saudi Arabia and the United Arab Emirates prohibit surrogacy [38].

India

Commercial surrogacy was legalized in India in 2002. However, this field has been contentious, leading to ongoing disputes. In 2012, restrictions were imposed on surrogacy visas, and in 2016, altruistic surrogacy was introduced, with commercial surrogacy being banned [25].

China

Following the abolition of the one-child policy, elderly couples in China have turned to surrogacy to have more children [39]. The “Measures on Administration of Assisted Human Reproduction Technology” prohibit the buying and selling of gametes, zygotes, and embryos. Thus, commercial surrogacy is illegal in China [40].

Japan

Japan is a leader in assisted reproductive technology (ART), but despite two decades of efforts, there is currently no specific law regarding surrogacy. Surrogacy is illegal, and if individuals perform surrogacy abroad, the surrogate is legally recognized as the mother of the child [41, 42].

Australia

In seven jurisdictions of Australia, surrogacy is legal, but commercial surrogacy is prohibited. Most surrogacy arrangements in Australia are based on family or friendship relationships. In Australia, all surrogacy-related costs are borne by the intended parents, and the government does not cover these expenses [43].

Europe

United Kingdom

According to Article 2 of the UK's 1985 law, non-commercial surrogacy is legal, and commercial surrogacy is prohibited. However, the surrogate may receive reasonable compensation for expenses incurred during pregnancy. Both types of surrogacies, including traditional and gestational surrogacy, are practiced in the UK, and foreigners cannot apply for surrogacy there, and there is a provision of citizenship to do surrogacy in England. 6 weeks to 6 months after the birth of the child, social parents can request a parental order for legal parenthood. One of the problems for the social parents of the fetus is related to Article 1A of the 1990s law, which states that no party can file a lawsuit based on the surrogacy contract. The process can lead to problems such as the failure to transfer the newborn to the social parents even if they fulfill their obligations, non-payment of compensation and expenses to the surrogate, and psychosocial issues for the surrogate [44-46].

Belgium and the Czech Republic

Unlike the UK, Belgium and the Czech Republic have no specific laws for surrogacy, but commercial surrogacy is illegal in both countries [47-49].

Greece

Surrogacy became legal in Greece in 2002, and

foreigners gained the right to use it in 2014. In Greece, surrogates undergo psychological and medical testing. According to Greek law, parents cannot choose the gender of the embryo, and relatives or friends of the social parents cannot donate ova or sperm, as specified in Law 3305-2005 [50, 51].

Russia

Commercial surrogacy has been legal in Russia since 1995, when the first case of IVF was conducted in the country [52]. Russian surrogacy is popular in the field of fertility tourism globally. According to **the Economist's report, the cost of surrogacy in Russia is \$20,000** [53]. After the surrogate provides birth, a Russian birth certificate is issued with the names of the child's social parents, making it legal in countries where surrogacy is otherwise illegal. Parents can transfer the baby to their country, provided their country has signed the Hague Convention of October 5, 1961 [54].

Ukraine

Both commercial and non-commercial surrogacy are legal in Ukraine, and like Russia, it is popular in fertility tourism worldwide [55]. The first surrogacy case in Ukraine occurred in 1995, and it had been growing until the COVID-19 pandemic. The ongoing war in Ukraine has had a significant impact on transnational and fertility tourism [56].

Netherlands

Both traditional and gestational surrogacy are practiced in the Netherlands. However, only altruistic surrogacy is permitted; commercial surrogacy is illegal [57].

France and Germany

Although there is high demand for surrogacy, it is illegal in France, and surrogacy contracts are considered criminal under Article 227-12. French citizens are permitted to pursue surrogacy abroad, though there are complications for children born through surrogacy in other countries [58, 59]. Otherwise, there is no limitation for French citizens that perform surrogacy in other countries, but there are some struggles for children that are born from surrogacy in other countries [60]. Germany has similar regulations, where both types of surrogacy are illegal, leading people to travel to other countries for surrogacy [61].

Spain and Italy

In Spain, altruistic surrogacy is illegal, and all surrogacy contracts are prohibited. According to

Protection of Human Rights and Fundamental Freedoms," children born from surrogacy in foreign countries can be registered in Spain [22]. Surrogacy is also banned in Italy, based on the belief that it violates women's dignity [62].

Denmark

In Denmark, both types of surrogacies are practiced. Gestational surrogacy is only permitted in an altruistic model, while traditional surrogacy involves using a surrogate ovum without assisted reproductive techniques [63]. Table 1.

Table 1. Surrogacy status in countries of Asia ²except Quebec, in all over the Canada altruistic surrogacy is legal

country	Gestational Surrogacy	Traditional Surrogacy	Commercial surrogacy	Done for foreigners
Saudi Arabia	×	×	×	×
Iran	✓	✓	✓	NA
United Arab Emirates	×	×	×	×
India	✓	✓	×	With limitations
China	✓	✓	×	NA
Japan	×	×	×	×
Australia	✓	✓	Illegal in some jurisdictions	NA*
Belgium	✓	✓	×	NA*
Czech Republic	✓	✓	×	NA*
France	×	×	×	×
Germany	×	×	×	×
Greece	✓	✓	✓	✓
Italy	×	×	×	×
Netherlands	✓	✓	×	NA*
Portugal	×	×	×	×
Russia	✓	✓	✓	✓
Spain	×	×	×	×
Ukraine	✓	✓	✓	✓
United Kingdom	✓	✓	×	×
Austria	×	×	×	NA
Georgia	✓	✓	✓	✓
Denmark	✓	✓	×	NA
South Africa	✓	✓	×	NA
Nigeria	✓	×	×	NA
Brazil	✓	✓	×	NA
United States of America	Differs between states	Differs between states	Differs between states	Done in states where surrogacy is legal
Canada ² [64]	✓	✓	×	NA
Mexico	Just in two states is legal	Just in two states is legal	NA	NA

8. Ethical challenges

The ethical challenges surrounding surrogacy encompass various dimensions, including the surrogate, the child, the intended parents, and the clinicians involved. Each group faces distinct ethical dilemmas and concerns, influenced by the nature of surrogacy and its commercial or altruistic forms.

8.1. Surrogate

The exploitation in surrogacy is a multi-aspect issue that includes ethics, legislation, and socioeconomic status. Although surrogacy offers couples the chance of having children, it also carries substantial dangers of exploitation, especially for surrogates.

The lack of stringent regulations leads to the exploitation of surrogates. As we have seen in several nations, several measures have been enacted to promote the reduction of this issue. Detractors contend that surrogacy has the potential

to commercialize the female body, therefore diminishing pregnancy and delivery to mere commodities targeted for business purposes. This process of commodification is especially concerning when surrogates come from underprivileged areas, where economic hardship may compel women to enter into surrogacy contracts. Instances of this nature can result in an unequal distribution of power, to the extent that wealthier prospective parents take advantage of the weaknesses of the surrogate mothers [23]. Surrogates from economically impoverished areas are especially vulnerable to exploitation because they may be forced into surrogacy arrangements out of financial desperation. The disparity gives reason for ethical considerations regarding the equity and impartiality of such agreements when the surrogate's reproductive services are used for the advantage of those with higher financial means.

Furthermore, ethical issues are raised about the autonomy and informed consent of surrogate mothers. Becoming a surrogate may be influenced by financial pressure, and this can compromise real autonomy, in which the surrogate may have limited comprehensive knowledge of the medical, emotional, and psychological consequences of the arrangement [65]. This highlights the need for counseling and open communication to guarantee that surrogates possess complete knowledge and consent about all aspects of the agreements.

Surrogacy arrangements involve intended parents from richer nations and surrogate mothers from poorer backgrounds; this disparity raises questions about the fairness and justice of such dealings, which reflect broader inequalities [66]. Critics argue that these arrangements result in "reproductive labor exploitation," where the richer party exploits the surrogate's reproductive system. The commercialization of surrogacy can have extensive negative social effects. It has the potential to exacerbate pre-existing gender and income disparities, especially in underdeveloped nations where surrogacy has emerged as a very valuable industry. Often, people perceive women primarily as carriers of offspring, which reinforces gender-based preconceptions and diminishes their complete individual autonomy [67].

8.2. Child

Children who are born via surrogacy may face numerous challenges. One of these challenges concerns their origin, which may have implications for their identity when they become aware of their birth circumstances. The child may also encounter perspectives regarding the relationship between the surrogate parent and their biological parents, which may induce terrible feelings, including confusion, alienation, or distress [68]. Furthermore, surrogacy-born children have a higher chance of social disapproval and stigma, particularly in countries where surrogacy is relatively less accepted or unlegislated. Stigma can have a negative impact on a child's interactions within the broader social structure, as well as their mental well-being or emotional development. It can also lead to increased stress for parents who are trying to help their children cope with society's misinterpretation of family, children, pregnancy, and parenting. Therefore, managing stigma and social pressures requires children to receive alternative parenting that is sensitive to negative perceptions [69, 70].

8.3. intended parents

Intended parents, from surrogate selection until

their death, face challenging decisions about surrogacy. Such decisions may introduce ethical dilemmas arising from the interests of the surrogate, the child, and the intended parents. Intended parents also consider the ethical predicament surrounding the potential exploitation of surrogate mothers. Many intended parents have a genuine desire to have children, but they also acknowledge that surrogate mothers participated in surrogacy due to economic circumstances, which represents additional ethical concerns about coercion and fairness. Additionally, challenges exist within the nature of the intended parent(s) and surrogate mother's relationship until the birth of the child [71-73].

8.4. Clinicians

Involved clinicians in surrogacy may face numerous ethical responsibilities, including ensuring that all parties are fully informed about the agreement, which involves ensuring that surrogates and intended parents understand the psychological and social implications of the surrogacy process. In addition, clinicians must balance the power dynamics between intended parents and surrogates, ensuring that the surrogate's approval is voluntary and not influenced by pressure or financial need. Additionally, as the clinicians are often compensated for their services, there is a potential ethical conflict between the financial interests of the clinicians and the surrogate and the child's well-being, which may encounter conflicts of interest, particularly in commercial surrogacy arrangements. Furthermore, clinicians must confirm that financial motivators do not disrupt their professional judgments, and their primary focus remains on the health and ethical treatment of all involved parties [74, 75].

9. Conclusion

Surrogacy includes a wide range of challenges that affect involved individuals in the process. The legal and ethical landscape of surrogacy varies all over the world and reflects a wide range of regulations. This highlights the need for international regulations to address these evident challenges, including efforts to reduce the risks of child trafficking, ensuring ethical practices in gamete donation, and protecting the rights and well-being of children, surrogates, and intended parents. Generally, both altruistic and commercial surrogacy require careful monitoring by governments to prevent potential issues and maintain ethical standards.

Declarations

Ethics approval and consent to participate

No applicable.

Consent for publication

No applicable.

Availability of data and materials

No data.

Competing interests

There are no financial relationships that pose a conflict of interest related to this manuscript.

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Authors' contributions

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Reviewing: PH

Conceptualization: PH

Figure design: PH

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All authors have read and approved the final version of the manuscript.

Declaration of Conflicting Interests

The authors declare that they have no competing interests.

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