

INDIAN FERTILITY SOCIETY Improve Sustainability in ART Practice

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Green IVF News Bulletin



Dr. Prof (Col) Pankaj Talwar, VSM Dr. (Prof) Shweta Mittal Gupta
President, IFS
Secretary General, IFS



Dr. Sonia Malik *Project Mentor*



Dr Meenu Vashisht Ahuja *Program Coordinator*



IFS SECRETARIAT

Flat No. 302, 3rd Floor, Kailash Building 26, Kasturba Gandhi Marg, C.P. New Delhi – 110001 \$\mathcal{L}\$ +91 9899308083 (Ms Farha Khan)

+91 11 40018184



President's Desk...

Advancing Sustainability in Reproductive Medicine

Dr. Prof.(Col) Pankaj Talwar VSM

President, IFS



When we heal the Earth, we heal ourselves Enhance fertility with Green initiatives!

In the realm of reproductive health, in vitro fertilization (IVF) has emerged as a beacon of hope for couples facing infertility. However, as the demand for fertility treatments escalates, so also the need to address the environmental impact of these practices. This initiative explores the concept of Green IVF—an innovative approach that prioritizes sustainability without compromising the quality of patient care.

By examining the environmental challenges associated with traditional IVF and presenting actionable solutions, this project aims to inspire a shift toward more ecofriendly reproductive technologies. Traditional IVF practice is largely resource-intensive, that results in a considerable carbon footprint and contributes to environmental degradation. To recognize these grey areas and bring about a paradigm shift in how we introduce green changes in our IVF setup, is of paramount importance.

Green IVF represents a significant evolution in the landscape of reproductive medicine. As we continue to innovate and refine the IVF techniques, the dual goals of enhancing patient outcomes and reducing environmental impact can be achieved; at the same time contributing to lower operational costs, making fertility services more accessible in the long run.

Thus, the Green IVF Initiative aims to catalyze dialogue among healthcare professionals, researchers, and patients, inspiring collaborative efforts to embrace sustainability in IVF practices. By initiating the Green IVF Project in India, Indian Fertility Society (IFS) strives to pave the way for a more responsible, compassionate approach to reproductive health that honors the well-being of future generations.



Green IVF- Sustainable IVF program: A Novel initiative by Indian Fertility Society

Dr. Prof. Shweta Mittal Gupta Secretary General, IFS



Our environment is the foundation which plays a pivotal role in ensuring our health, economy and well-being. Climate change, resource depletion, and pollution affect every facet of life. There is an urgent need to shift toward sustainable practices which is felt by everyone, including industries like healthcare and assisted reproductive technologies (ART). In a world where IVF and other ART procedures are becoming more common, especially as people turn to these treatments to build families, it is vital that we consider the environmental implications of these technologies. The green world is not just an abstract concept, it's about ensuring a healthy future for all of us, both in terms of the planet's ecosystem and the next generation. There is an urgent need to tie this idea of a "green world" directly to ART and inculcate the habit of sustainable living.

By integrating green technologies and sustainability into ART, we intend not only to minimize harm but also to pave the way for future innovations that will benefit everyone. Countries like India, with growing IVF markets, can pioneer "Made in India" green IVF technologies that can reduce the global carbon footprint. Afterall, green world matters to us all, and by making the IVF process greener, more efficient, and more eco-friendly, we're contributing to a 'healthy' future where both people and the planet can thrive

This innovative step taken by Indian Fertility Society aims at sensitizing ART clinicians, embryologists and stake holders who will collectively work towards the goal of green, sustainable IVF and put India on the global green map.





Pearls of Wisdom

Dr. Sonia Malik Mentor, Green IVF Initiative Chief Clinical Mentor, Nova IVF & Fertility, INDIA



Green Revolution by White Coat, Leading from despair to Hope!

In the 1960's, a global clarion call of 'Green Revolution' was given to increase the agricultural yield in order to meet the increasing food demands of a rapidly rising population. This new mantra indeed proved successful worldwide and also drove India towards becoming a more powerful self-sufficient and economically strong nation. Recently, a new term has started coming up in the field of reproduction – Green IVF! Interestingly, both terms pertain to reproduction: one in the field of plants and the other in animals/humans... dealing with the seed and soil!

The Green Revolution involved the introduction of high-yielding variety (HYV) seeds, advanced irrigation techniques, and chemical fertilizers to boost agricultural productivity Similarly, Green IVF utilizes innovative techniques such as natural cycle IVF, which minimizes hormonal medication and focuses on using advanced imaging and selection technologies for embryo quality assessment. Both movements aim to increase production efficiency. The Green Revolution aimed to alleviate hunger and improve food security whereas Green IVF addresses infertility issues, providing effective sustainable health solutions for couples struggling to conceive.

The biggest challenge with the green revolution has been the change in the genetics and epigenetics profile due to use of insecticides, pesticides and genetically engineered varieties of seeds. Fortunately, in contrast, Green IVF emphasizes a more holistic, innovative and sustainable approach by reducing medication use and environmental impact associated with traditional IVF methods.

I congratulate the present team of IFS led by Col.(Dr) Talwar and ably supported by Dr Shweta Mittal for taking up this very topical subject as the theme of this year. I am sure with the well thought of program, and committed team members, we shall see a change in ART practice in the country very soon.

I wish IFS a thumping success





The IFS Green Brigade



Dr. Sonia Malik Mentor



Dr. Prof (Col) Pankaj Talwar, VSM Dr. (Prof) Shweta Mittal Gupta President, IFS



Secretary General, IFS



Dr Meenu Vashisht Ahuja Program Coordinator

Team 1 **Team Leaders**



Dr. Ritu Khanna



Dr. Vidhu Modgil

Team 2 Team Leaders



Dr. Manisha Vajpeyee



Dr. Yuvraj Jadeja

Team 3



Dr. Shweta Mittal Gupta

Team Leaders



Dr. Lavleen Sodhi

Team 4 Team Leaders



Dr. Bharati Dhorepatil



Dr. Neha Lad

Team 5



Dr. Shalini Chawla Khanna



Dr. Rajvi Mehta

Team 6 Team Leaders



Dr. Sarabpreet Singh



Dr. Pooja Awasthi

Team 7





Dr. Yogesh Kumar



Dr. Shilpa Doultani

Team 8

Team Leaders



Dr. Aanchal Agarwal



Dr. Sangita Sharma

Team 9 Team Leaders



Dr. Bindu Chimote



Dr.Meenu Agarwal

Green Teams

IFS Green Initiative proposes to touch every aspect of the IVF field so as to improve sustainability in routine ART practice. Accordingly, a task-force of 9 specialized 'Green Teams' has been formed to investigate and evaluate problem areas where green alternatives can be applied. Phase-wise implementation of novel ideas is envisaged, facilitating a dynamic shift to environmentally friendly techniques in the near future.

1.Understanding green sustainable IVF

- 2. Designing sustainable ART clinics
 - 3. Clinician perspective towards reducing carbon footprint
 - 4 .Low cost IVF to reduce environmental load
 - 5. Bio medical waste disposal and recycling of products
 - 6. Embryology initiatives to reduce environmental carbon load
 - 7. Cryobiology and greenhouse emissions
 - 8. Made in India initiative to reduce GHG emissions
- 9. Novel ideas and net zero by 2045



Team 1 Bulletin Advancing Sustainable IVF: A Strategic Imperative

Team Leaders



Dr. Ritu Khanna



Dr. Vidhu Modgil



Dr. Lakshmi Chirumamilla



Dr. Ashwin Rao



Dr. Mitali Vadudeva



Advancing Sustainable IVF: A Strategic Imperative

Introduction

Rapid advancements in field of in-vitro fertilization (IVF) often come at the cost of losing sustainability both in terms of environmental impact and equitable access to healthcare. Limited accessibility, increased cost, medical waste generation, and ethical dilemmas related to embryo disposition are significant challenges associated with Assisted Reproductive Technologies (ART)¹⁻³. Furthermore, with the current large increase in unemployment, fewer patients, even in reasonably rich cultures, will be able to afford expensive IVF therapy on their own. The affordability of IVF becomes much more important4. It is time to think on what is best for our patients and society.

Here we provide for our readers practical strategies on sustainable IVF, balancing clinical efficiency, environmental responsibility, and financial feasibility while preserving good success rates.

1. Optimizing Clinical Efficiency for Sustainable IVF

Sustainable ART should focus on minimizing resource-intensive interventions yet maintain maximum success rates. This can be possible by utilizing some of the following strategies.

- Mild Ovarian Stimulation Protocols: Reducing gonadotropin doses minimizes the risk of ovarian hyper stimulation syndrome (OHSS) and at the same time, it reduces medication costs and wastes.
- Elective Single Embryo Transfer (eSET): Multifetal pregnancy is associated with negative outcomes such as high maternal morbidity, premature birth, stillbirth, cesarean section, and long-term neurodevelopment problems. ESET decreases several pregnancy hazards while maintaining cumulative live birth rates, making it an environmentally and ethically viable technique.⁷
- Al-Guided Embryo Selection & Non-Invasive Testing: Optimizing various aspects of the IVF process by utilizing Artificial intelligence (AI) may significantly enhance the sustainability. AI algorithms can outperform traditional methods in predicting embryo viability by utilizing their ability to analyze extensive datasets of embryo images and developmental information leading to improved embryo selection, reduced cycles and minimizing emotional and financial burdens on patients. Furthermore, AI automates embryo scoring, decreasing manual evaluations and eliminating biases from inter- and intra-observer variations ensuring consistent and objective assessments. Hence as per recent literature, clinics can achieve higher success rates and offer more efficient and patient-friendly treatments by integrating AI into IVF practices[§].



Frozen Embryo Transfer (FET) Over Fresh Transfers: Frozen embryo transfer (FET) improves the sustainability of in vitro fertilization (IVF) by providing flexible and personalized approaches to endometrial preparation. FET protocols can improve implantation rates, provide higher safety of the fetus, eliminate the need for repeated IVF cycles and drugs, and alleviate the emotional and financial pressures placed on patients⁹.

2. Reducing Laboratory Waste & Energy Consumption: Concept of Green IVF Practices "

A green IVF clinic combines sustainability into its infrastructure, aiming on minimizing energy usage and medical waste and at the same time ensuring high-quality patient care. IVF laboratories are resource-intensive, using up to 100 times more energy per cycle than standard medical operations. However, using renewable energy sources like solar and wind power can reduce carbon emissions by up to 40%, making a substantial contribution to environmental sustainability. Using sustainable procurement strategies, like eco-friendly culture media, cryopreservation chemicals, biodegradable packaging and effective bio-waste treatment including disposal of expired medication, recycling and reusing of lab materials minimize the environmental impact. Proven techniques that ensure higher success rates should be prioritized. For example, Cryopreservation efficiency, achieved through enhanced cryostorage techniques and low-volume vitrification procedures, contributes significantly to sustainability by lowering liquid nitrogen use while increasing embryo survival rates.

3. Ethical & Societal Considerations in IVF Sustainability

Ethical and societal considerations are pivotal in the pursuit of sustainable in vitro fertilization (IVF) practices. While IVF has revolutionized reproductive medicine, it faces ethical challenges, including inequitable access to services, challenges faced by LGBTQ+ individuals, lack of insurance coverage, and the ethical implications of embryo donation.

Discriminatory practices and lack of cultural competence among healthcare providers are challenges faced by LGBTQ+ individuals often leading to suboptimal care and emotional distress. For instance, transgender men may experience discomfort and misgendering during pregnancy. This emphasis the need for inclusive healthcare practices.¹⁰



Embryo donation practices raise ethical questions about the donation or disposal of unused embryos which involve complex considerations like the moral status of embryos and the rights of potential parents. Addressing these ethical dilemmas requires a balanced approach that considers the benefits of IVF alongside its societal and environmental implications. Implementing policies that promote equitable access, inclusivity, and ethical practices in IVF can enhance the sustainability and social responsibility of reproductive healthcare.²

Inequitable access to IVF services also results from high costs, lack of insurance coverage and limited availability which results in unequal reproductive opportunities forcing infertile couples to bear societal burdens if they are unable to access necessary treatments. Government subsidies can make IVF more accessible to a broader population. For Instance, in the United States, starting in 2025, the Federal Employees Health Benefits (FEHB) Program will provide federal government employees with multiple plan options that cover IVF, aiming to alleviate financial barriers ², ¹¹. Such programs should be promoted in other sectors as well as other nations to address disparities in reproductive healthcare access, ensuring that individuals and couples have the opportunity to pursue family-building options without prohibitive costs.

4. Educating Patients & Healthcare Providers.

Sustainable IVF begins with educated decisions at every stage, from patient selection to clinical training. Patient education is essential for encouraging environmentally friendly fertility therapies. Fertility education can help to improve fertility literacy by educating people and couples to make informed reproductive decisions, hence lowering the incidence of infertility and the need for fertility treatments. Health care practitioners and staff must be trained to effectively communicate messages to target communities. Interventions for professionals, including primary health practitioners, family planning nurses, gynecologists and counselors should focus on building training-specific abilities or boosting understanding about communication in a particular age group or problem. Increased public understanding of the possibly modifiable factors that influence fertility may minimize the risk of infertility and the need for reproductive therapy. As a result, worldwide projects are now being implemented in a variety of countries.

Organizations such as WHO (World Health Organization), ASRM (American Society for Reproductive Medicine), ESHRE (European Society of Human Reproduction and Embryology), and IFFS (International Federation of Fertility Societies) are actively working to improve accessibility, affordability, ethical standards, and sustainability in IVF through research, policy recommendations, education, and global collaborations. It is equally critical to understand the role and limitations of current treatments and technology in the treatment of infertility and the formation of modern families' for lesbian, gay, bisexual, and transgender individuals' 12, 13.

Conclusion

The pursuit of sustainable IVF is a multifaceted endeavor that requires balancing clinical efficiency, environmental responsibility, financial feasibility, and ethical considerations. Optimizing clinical protocols can enhance success rates while minimizing resource-intensive interventions. Green IVF practices further contribute to sustainability. Addressing societal and ethical concerns demands policy-driven solutions at government and hospital management levels to make healthcare ecosystem inclusive for all. Additionally, educating healthcare providers and patients on sustainable IVF practices fosters informed decision-making and responsible reproductive care. By integrating these strategies, the future of IVF can be both ethically sound and environmentally sustainable, ensuring equitable access to fertility treatments while preserving resources for generations to come.

REFERENCES

- 1. Farlie F, Palmer GA, Cohen J, Calcagni C, Gorbunova A, Lawford Davies J, et al. Sustainability in the IVF laboratory: recommendations of an expert panel. Reprod Biomed Online. 2024 Jan 1;48(1):103600.
- 2. Appiah D, Ganle JK. Ethical constraints and dilemmas in the provision of in-vitro fertilization treatment in Ghana: from the perspectives of experts. BMC Med Ethics. 2024 Oct 17;25(1):114.
- 3. Chiware TM, Vermeulen N, Blondeel K, Farquharson R, Kiarie J, Lundin K, et al. IVF and other ART in low- and middle-income countries: a systematic landscape analysis. Hum Reprod Update. 2021 Feb 19;27(2):21328.
- 4. Nargund G, Fauser BCJM. Mild ovarian stimulation for IVF is the smartest way forward. Reprod Biomed Online. 2020 Oct;41(4):56971.
- 5. Yim SF, Lok IH, Cheung LP, Briton-Jones CM, Chiu TTY, Haines CJ. Dose-finding study for the use of long-acting gonadotrophin-releasing hormone analogues prior to ovarian stimulation for IVF. Hum Reprod. 2001 Mar 1;16(3):4924.
- 6. Datta AK, Maheshwari A, Felix N, Campbell S, Nargund G. Mild versus conventional ovarian stimulation for IVF in poor, normal and hyper-responders: a systematic review and meta-analysis. Hum Reprod Update. 2021 Feb 19;27(2):22953.
- 7. Velez MP, Soule A, Gaudet L, Pudwell J, Nguyen P, Ray JG. Multifetal Pregnancy After Implementation of a Publicly Funded Fertility Program. JAMA Netw Open. 2024 Apr 25;7(4):e248496.
- 8. Olawade DB, Teke J, Adeleye KK, Weerasinghe K, Maidoki M, Clement David-Olawade A. Artificial intelligence in invitro fertilization (IVF): A new era of precision and personalization in fertility treatments. J Gynecol Obstet Hum Reprod. 2025 Mar 1;54(3):102903.
- 9. Zhang Y, Fu X, Gao S, Gao S, Gao S, Ma J, et al. Preparation of the endometrium for frozen embryo transfer: an update on clinical practices. Reprod Biol Endocrinol. 2023 Jun 8;21(1):52.
- 10. Kirubarajan A, Patel P, Leung S, Park B, Sierra S. Cultural competence in fertility care for lesbian, gay, bisexual, transgender, and queer people: a systematic review of patient and provider perspectives. Fertil Steril. 2021 May 1;115(5):1294301.
- 11. Federal Government to Expand IVF Benefits for Federal Employees [Internet]. [cited 2025 Feb 9]. Available from: https://resolve.org/federal-government-to-expand-ivf-benefits-for-federal-employees/?utm_source=chatgpt.com
- 12. Martins MV, Koert E, Sylvest R, Maeda E, Moura-Ramos M, Hammarberg K, et al. Fertility education: recommendations for developing and implementing tools to improve fertility literacy[†]. Hum Reprod Oxf Engl. 2023 Dec 13;39(2):293302.
- 13. The International Fertility Education Initiative: research and action to improve fertility awareness PMC [Internet]. [cited 2025 Feb 10]. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC8441587/

















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(IEP) Intelligence Empowerment Program



NEP) Nurses Empowerment Program



(PEP) Patient Empowerment Program



(SEP) Self Empowerment Program



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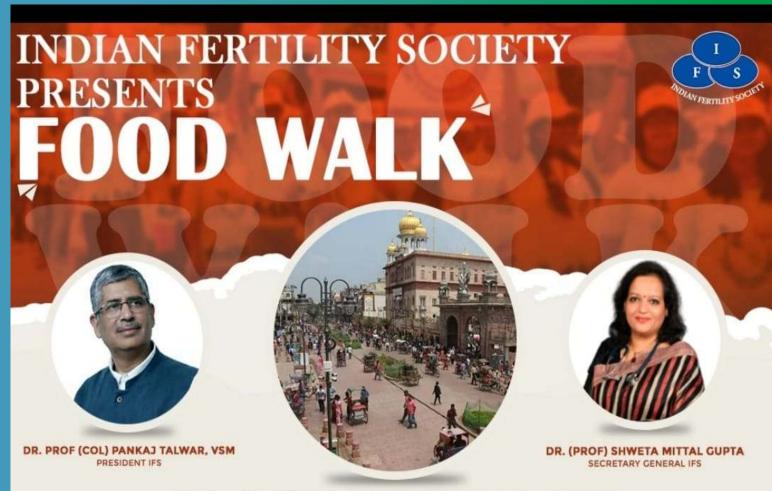
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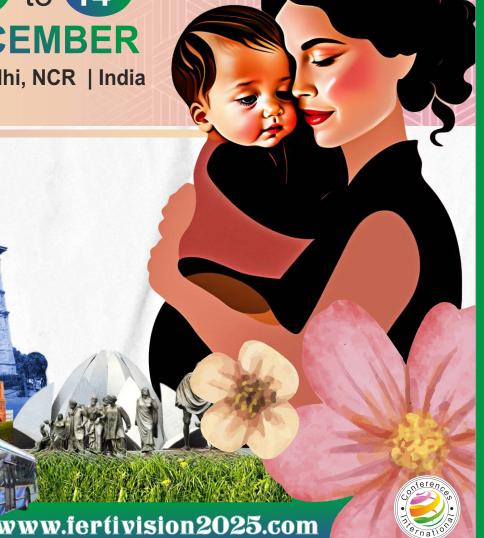
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