



IVF IN MALAYSIA: A JOURNEY OF PROGRESS AND PROMISE

Wan Muhamad Salahudin Wan Salleh^a, Azantee Yazme Abdul Wahab^a, Roszaman Ramli^{b*}

^a Kulliyah of Medicine, International Islamic University of Malaysia, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia

^b Department of Clinical, Faculty of Medicine and Defence Health, National Defence University of Malaysia, Sg. Besi Camp, 57000 Kuala Lumpur, Malaysia

ARTICLE INFO

ARTICLE HISTORY

Received: 01-08-2024

Revised: 01-09-2024

Accepted: 01-10-2024

Published: 31-12-2024

KEYWORDS

IVF

Assisted reproductive technologies

Technological advancements

Ethical considerations

ABSTRACT

In vitro fertilization (IVF) has undergone significant evolution in Malaysia, transitioning from an innovative procedure to a mainstream infertility treatment over four decades. This narrative review highlights the progress, challenges, and future directions of IVF in Malaysia. Annually, 3,000 to 5,000 IVF cycles are conducted across public and private centres, reflecting a rising demand driven by declining fertility rates and increasing societal acceptance. This paper synthesizes advancements such as intracytoplasmic sperm injection (ICSI), cryopreservation, and preimplantation genetic testing (PGT) that have significantly improved success rates. Challenges such as high costs, limited access, and ethical concerns persist, requiring innovative policy and clinical solutions. Future perspectives emphasize personalized treatments, artificial intelligence (AI) integration, and enhanced accessibility, ensuring the balance of medical innovation with ethical considerations.

1.0 INTRODUCTION

IVF has transformed from a groundbreaking medical marvel to a routine clinical procedure. Over four decades, Malaysia has witnessed IVF's evolution in tandem with significant societal changes, including shifts in family structures, economic pressures, and the rising age of first-time mothers. The country's Total Fertility Rate (TFR) has plummeted from 4.9 children per woman in 1970 to 1.7 in 2021, one of the lowest in Southeast Asia [1-2]. This trend reflects broader global patterns of declining fertility, driven by urbanization, delayed marriages, and lifestyle changes. Infertility affects an estimated 10–15% of couples in Malaysia, a statistic consistent with global figures [3-4]. These numbers underscore the growing importance of assisted reproductive technologies (ART) in addressing the needs of individuals and couples facing fertility challenges. IVF has emerged as a cornerstone of ART, offering hope to those previously unable to conceive. However, its adoption in Malaysia is influenced by cultural, religious, and socioeconomic factors that warrant careful consideration.

This paper adopts a narrative review methodology, synthesizing existing research, clinical data, demographic trends, and policy analyses to provide an overview of IVF in Malaysia. Literature was selected from databases such as PubMed, Scopus, and Google Scholar, focusing on publications from the last decade. Selection criteria included relevance to IVF advancements, societal and ethical implications, and the Malaysian context. Demographic data and policy documents were sourced from official government publications. Themes identified include technological innovations, success factors, ethical considerations, and future directions. To ensure a balanced perspective, this review incorporates findings from international studies that are contextualized for Malaysia's unique demographic and cultural setting. The methodology highlights how societal and clinical factors intersect with technological progress to shape IVF outcomes in the country.

*Corresponding Author | Ramli, R. | roszaman@upnm.edu.my

© The Authors 2024. Published by Penerbit UPNM. This is open access article under the CC BY license.

2.0 HISTORICAL CONTEXT AND EARLY CHALLENGES

The birth of Louise Joy Brown in 1978 marked the global inception of IVF. Malaysia's journey began in the mid-1980s, with the establishment of the first government-funded IVF program at LPPKN. Some private fertility centres had started offering similar services a few years earlier. These early efforts were met with scepticism from both the medical community and the public. Limited funding, a lack of trained professionals, and logistical challenges were significant hurdles [5-6]. Cultural and religious considerations also played a critical role in shaping public opinion. The permissibility of IVF under Islamic law was a central concern, leading to deliberations by religious scholars. Ultimately, clear guidelines were established, ensuring that IVF procedures adhered to Islamic principles, such as prohibiting third-party gamete donation [6-7].

Despite these challenges, Malaysia demonstrated resilience in adopting and advancing IVF technologies. The establishment of training programs and collaborations with international experts paved the way for rapid progress. Today, Malaysia boasts a robust network of fertility centres offering state-of-the-art services.

3.0 SUCCESS RATES AND DETERMINING FACTORS

The success of IVF is quantified by various metrics, including implantation, clinical pregnancy, ongoing pregnancy, and live birth rates. In Malaysia, the success of IVF treatments is influenced by a multiple factors such as the age of the patient, the quality of eggs and sperm, previous pregnancy history, and the protocols used for ovarian stimulation. The success rates in Malaysian fertility centres, both public and private, display a wide range due to the complexity and highly individualized nature of IVF treatments. This variance underscores the importance of personalized treatment plans and the need for continuous improvement in protocols and techniques [3].

3.1 Relevant Research and Local Developments

Research conducted at institutions such as International Islamic University of Malaysia (IIUM) and National Defence University of Malaysia (NDUM) has provided additional insights into factors influencing IVF success. Studies have highlighted the role of endometrial thickness, ovarian reserve, and body mass index (BMI) in determining outcomes [3, 8]. Recent investigations have also focused on the impact of lifestyle factors, such as smoking/ vaping, diet, and stress on fertility. The integration of local data profiles into clinical practice has led to the development of patient-specific protocols. For example, individualized ovarian stimulation strategies have been shown to improve outcomes in patients with diminished ovarian reserve. These advances underscore the importance of tailoring treatments to the unique needs of Malaysian patients.

3.2 Advances in IVF Technology

Malaysia has embraced cutting-edge technologies to improve IVF success rates. Time-lapse imaging, for instance, has revolutionized embryo selection by allowing continuous monitoring of embryo development, leading to better implantation outcomes [9-10]. Cryopreservation techniques, particularly vitrification, have enhanced the safety and efficiency of freezing eggs and embryos. PGT has enabled the identification of genetic abnormalities before embryo transfer, reducing the risk of inherited disorders. AI is now being explored for its potential to optimize treatment planning and predict outcomes based on patient data [11-12]. These innovations represent significant milestones in the field.

3.3 Challenges and Ethical Considerations

Accessibility remains a major challenge, with high costs limiting access for many couples. Public fertility centres often face long waiting lists, while private clinics cater primarily to wealthier patients. Ethical concerns include the fate of surplus embryos, the implications of genetic testing, and the potential for social disparities in access to treatment [13].

4.0 THE FUTURE OF IVF IN MALAYSIA

The future of IVF in Malaysia is bright, with advancements in personalized medicine and AI-driven solutions expected to enhance success rates. Individualized protocols, incorporating genetic and epigenetic data, are likely to become standard practice [12]. Innovations in embryo and ovarian tissue preservation hold promise for extending fertility options for women facing age-related or medical challenges. Efforts to reduce costs and improve accessibility are critical. Policymakers and healthcare providers must work together to expand public funding and subsidies for IVF. Additionally, public education campaigns can help address misconceptions and promote greater acceptance of IVF as a viable option for infertility treatment.

4.0 CONCLUSIONS

The evolution of IVF in Malaysia reflects a commitment to advancing medical technologies while respecting cultural and ethical considerations. Addressing barriers such as cost, and accessibility will be key to ensuring that IVF remains a safe and effective option for all. Continued innovation and collaboration among stakeholders will pave the way for new milestones in reproductive medicine.

5.0 CONFLICT OF INTEREST

The authors declare no conflicts of interest.

6.0 AUTHORS CONTRIBUTION

Wan Salleh, W. M. S. (Resources; Software; Data curation; Writing - original draft; Resources)

Abdul Wahab, A. Y. (Writing - original draft; Project administration; Supervision)

Ramli, R. (Conceptualization; Methodology; Formal analysis)

7.0 ACKNOWLEDGEMENTS

This study was not supported by any grants from funding bodies in the public, private, or not-for-profit sectors. The authors fully acknowledged Ministry of Higher Education (MOHE) and National Defence University of Malaysia (NDUM) which makes this important research viable and effective.

List of Reference

- [1] National Population and Family Development Board, Malaysia. (2022). Malaysia Demographic Data 2021.
- [2] Lim, S. Y., et al. (2022). Fertility Declines and Policy Responses. Asian Population Studies.
- [3] Ahmad, N.S., Abdul Latif, K. (2021). Factors Influencing IVF Success in a Multiethnic Society. Malaysian Journal of Medical Sciences.
- [4] Singh, M., et al. (2023). Early Developments in Assisted Reproduction. Reproductive Technology Journal.
- [5] Wong, L. P., Beh, Y. H. (2023). Advancements and Outcomes of Assisted Reproductive Technologies in Malaysia. Fertility and Sterility.
- [6] Ali, A. S., et al. (2021). Islamic Perspectives on ART. Islamic Bioethics Journal.
- [7] Ministry of Health, Malaysia. (2023). Future Directions for IVF Policy and Technology in Malaysia.
- [8] Chong, W. S., et al. (2022). Predictors of IVF Success in Asia. Fertility Research.
- [9] Chen, X. Y., et al. (2023). Time-Lapse Imaging for IVF. Journal of Reproductive Medicine.
- [10] Lundin, K., Park, H. (2020). Time-lapse technology for embryo selection. Upsala Journal of Medical Sciences.
- [11] Patel, R., et al. (2024). AI in IVF: Opportunities and Challenges. Artificial Intelligence in Medicine.
- [12] Kovacs, P., et al. (2024). Time-Lapse Imaging and AI in IVF. Journal of Obstetrics and Gynaecology Canada.
- [13] Tan, S. L., et al. (2023). Equity in Access to IVF. Global Health Research.