

## Infertility Treatment Models: Progress or Profit? Examining Public, Private, and Hybrid Approaches

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### Abstract

**Background:** Advances in medically assisted reproduction (MAR) and private equity involvement are reshaping fertility care, presenting new ethical and economic challenges.

**Objective and Rationale:** This review examines the implications of public, private, and hybrid fertility clinic models, focusing on conflicts of interest and ethical concerns in the commercialization of fertility services.

**Methods:** Literature on fertility care models was synthesized, including reports from ESHRE, health registries, PubMed articles, and private equity publications.

**Outcomes:** Public clinics provide subsidized but basic services with long wait times. Private clinics, driven by profit, offer advanced treatments at higher costs, while hybrid models aim to balance accessibility and innovation. Private equity involvement promotes high-margin treatments, potentially compromising patient-centered care.

**Wider Implications:** The growth of the fertility industry requires balancing financial interests with ethical obligations to ensure evidence-based, compassionate care. Strengthened regulatory oversight is crucial to protect patient well-being and uphold clinical integrity.

**Keywords:** Medically Assisted Reproduction (MAR); Fertility Care; Public, Private, and Hybrid Fertility

### Introduction

The primary goal of an infertile couple is to have the child they desire. Achieving this goal involves various diagnostic and treatment tools. The doctor acts as a problem solver, drawing from a range of options, tailored to the specific needs of the couple. Some solutions are more expensive than others, with varying degrees of effectiveness. Among the tools available, some are evidence-based and recommended by scientific societies, while others lie in a grey zone, based on opinion rather than robust data [1].

In Western countries, fertility clinics are typically managed under three main systems: public, private, and hybrid models [2,3]:

- **Publicly funded fertility clinics:** These clinics are part of the national healthcare system and are funded by the government. Services may be offered at no cost or at a reduced fee for eligible patients, as seen in countries with socialized healthcare systems like the UK, Canada, and parts of Western Europe (e.g. Spain, Sweden). However, access is often governed by strict eligibility criteria, such as age limits and the number of previous attempts at fertility treatment. Public clinics also tend to have longer waiting times due to high demand, although the costs are typically lower than in private clinics, with the healthcare system covering part or all of the treatment.
- **Private fertility clinics:** These clinics are owned and operated by private entities or individuals on a for-profit basis. They offer a broader range of services and may impose fewer restrictions on treatments. Private clinics are prevalent in countries like the U.S., UK, Spain, and Germany, where healthcare privatization is more common. Patients benefit from greater flexibility and often faster access to treatments, although the costs are significantly higher. These clinics may offer cutting-edge technologies and personalized services
- **Hybrid models (Public-private partnerships):** These clinics operate with a combination of public funding and private management. Some services may be publicly funded, while patients can pay for additional treatments out-of-pocket. Such models are seen in countries like Australia, New Zealand, and parts of Europe. While the private aspect of these clinics allows for faster access to treatments, they typically offer a mix of basic services (publicly funded) and advanced treatments (privately funded).
- **Third-party or donor-based clinics:** These specialized clinics focus on donor-based treatments such as egg or sperm donation, surrogacy, and gamete preservation. While most are privately run, some countries provide public funding for these services. They are common in countries like the U.S. and parts of Europe (e.g. Spain, Denmark), where legal frameworks for donor-based treatments are well established. These clinics often offer a wide range of donor-related treatments under the oversight of regulatory bodies such as the Human Fertilisation and Embryology Authority (HFEA) in the UK, which ensures ethical and legal compliance.

Each model offers different levels of access, pricing, and service depending on the healthcare system, regulatory frameworks, and the degree of privatization in each country [2,3].

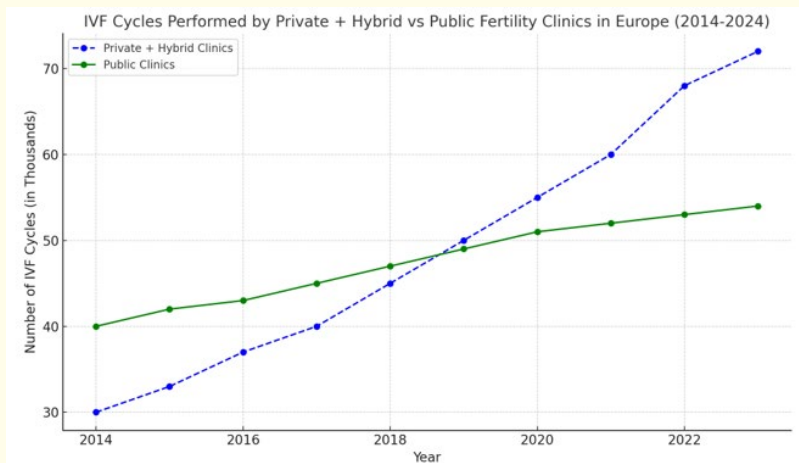
### Methods

Literature on fertility care models was synthesized, including reports from ESHRE, CDC, health registries, PubMed articles, and private equity publications.

### Results

#### Time-related shifts in model proportions and efficacy

When the resources of a fertility facility are provided by the public sector, ethical considerations regarding cost-saving measures become crucial to achieving the desired outcomes. These costs are ultimately borne by the community, and failure to comply with these considerations usually results from negligence, carelessness, or incompetence, rather than personal gain. However, in privately owned facilities, cost-saving measures are more aggressively enforced, often at the expense of service quality. The primary goal of private ownership is profit, which may be pursued without ethical limits, although some clinics aim to maintain a balance between profitability and quality of care [2-4].



**Figure 1:** Here is the graph showing the trend of IVF cycles performed by private plus hybrid fertility clinics versus public clinics in Europe over the last 10 years (2014-2024). As the graph demonstrates, private and hybrid clinics have seen a significant increase in the number of IVF cycles, surpassing public clinics over the years. Public clinics have also grown but at a steadier rate compared to the more rapid rise in the private and hybrid sector. From a) ESHRE (European Society of Human Reproduction and Embryology) reports; b) National health authorities and registries (e.g. HFEA (Human Fertilisation and Embryology Authority), which regularly reports on fertility clinic performance and treatment trends; c) Industry reports from private equity firms: Data on acquisitions and the number of cycles performed in privately-owned clinics may also be available in private equity or industry analyses.

### Emergence of conflicts of interest and ethical challenges in fertility care

Private equity firms, such as GED Capital and KKR, have become significant players in the fertility sector, exemplified by the acquisition of Fresenius’ fertility business, Eugin Group, for up to €500 million [4]. Eugin operates 69 clinics across 11 countries and generated €227 million in revenue in 2022. KKR’s acquisition of IVI RMA for €3 billion highlights the growing influence of private equity in assisted reproduction, as these firms now dominate much of the global fertility market. IVI RMA, employing 4,400 staff across 14 countries, reflects how private equity is reshaping the fertility industry through consolidation [5-10].

This consolidation follows broader “roll-up strategies,” where independent clinics and small chains are merged to create larger, more profitable enterprises. However, this also introduces significant debt and increased pressure to expand offerings and boost sales. Concerns are growing that the increased focus on profitability risks pushing expensive and unproven add-on procedures, such as pre-implantation genetic testing (PGT-A), which can elevate costs without guaranteed benefits. These financial pressures raise ethical questions about the impact of commercialization on patient care and the transparency of treatment offerings [4,7]. The fertility industry is booming, driven by delayed childbearing and rising infertility rates, with IVF now accounting for around 9% of births in high-income countries. The global fertility market, valued at \$34.7 billion in 2023, is projected to nearly double by 2033. However, with the industry’s expansion, there is increasing concern that private equity’s influence is shifting the focus from patient-centered care to profit-driven models, exacerbating global inequalities in access to fertility treatments. The high costs make fertility care inaccessible to many, particularly in low- and middle-income countries, where few can afford such services [8,9,11-13]. While private equity-backed clinics benefit from professional management and investment, there are ongoing debates about whether their focus on maximizing profits will undermine the quality and accessibility of care. Regulation is crucial to ensure that the fertility industry remains grounded in evidence-based practices, patient

welfare, and ethical standards. The long-term impact of private equity on fertility services will depend on finding a balance between financial imperatives and the need to maintain high-quality, patient-focused care [4,7,8,9,11,12].

Typical Trends Observed (based on available global data):		
2000s	Women under 35	20%-25%
2010s	men under 35	30%-35%
2020s	men under 35	31%-40%

**Table 1:** Trends of worldwide IVF programs successful during the last 20 years. According to • The Human Fertilization and Embryology Authority (HFEA) for the UK • The European Society of Human Reproduction and Embryology (ESHRE) for Europe • The Centers for Disease Control and Prevention (CDC) for the USA.

### The influence of private equity in the fertility sector and the evolution of the clinician’s role and administrative changes

In private fertility centers, particularly those acquired by private equity firms, there can be varying management goals. Some owners balance the dual objectives of cost efficiency and maintaining high-quality services. However, in many cases, the primary focus of private equity acquisitions is to reduce costs, boost profits, and resell the business at a higher value within a short timeframe. In these situations, increasing dividends and financial returns often take priority over maintaining or improving service quality. This tendency is common in acquisitions by private equity, where the emphasis shifts from patient outcomes to financial performance.

Private equity (PE) involvement in fertility clinics can have a significant impact on patient trust, both positively and negatively. This influence stems from the shift in operational priorities, the transparency of care, and the overall patient experience. Here’s how private equity affects patient trust:

- **Profit vs. care prioritization:** One of the primary concerns is that PE-backed clinics may prioritize profitability over patient care. Patients might perceive that the clinic is more focused on financial outcomes, such as recommending unnecessary treatments or “add-ons” that inflate costs without proven medical benefits. This perception can erode trust if patients feel their health is secondary to the clinic’s revenue goals [14-16]. The push for additional fertility treatments (e.g. extra cycles, genetic testing) without clear evidence of improved outcomes may make patients feel that they are being exploited rather than genuinely cared for [8,9,11,12,17].
- **Increased commercialization:** Private equity investment can lead to the commercialization of healthcare services, which may cause patients to question whether clinics are making decisions based on medical needs or financial incentives [4]. The introduction of aggressive marketing strategies or the offering of non-essential services to boost revenue can harm the credibility and integrity of a fertility clinic in the eyes of the patient [17]. Clinics owned by private equity may engage in heavy advertising campaigns promoting expensive treatments or services that might not be necessary, creating skepticism about the clinic’s true priorities. Some private clinics employ subtle yet legal tactics that compromise transparency. Instead of presenting success rates clearly (that patients today may find by themselves by using calculators [18]), they use marketing strategies reminiscent of retail promotions. One common technique is the “satisfaction or refund” guarantee, prominently advertised to attract patients. However, the fine print-often buried deeper in the contract-reveals that the clinic staff alone determine whether the outcome qualifies for a refund. These contracts, typically associated with high fees, are only available to patients with favorable prognoses, excluding those with poorer chances. This system allows the clinic to capitalize on successful cases while charging higher fees for treatments that are more likely to fail. Key performance indicators analysis is not affordable by common patients knowledge [14,15,19,20].
- **Quality of care:** On the one hand, private equity involvement can bring in much-needed capital, allowing clinics to invest in state-of-the-art technology and highly trained staff, potentially improving patient outcomes and fostering trust. Patients may feel reassured

by access to advanced treatments and personalized care plans [16]. On the other hand, cost-cutting measures aimed at maximizing profits can lead to reduced staffing, less personalized care, or a focus on volume over quality, which can harm patient trust if they feel their care is rushed or inadequate [16,21,22].

We do not have specific data on which type of technology—whether older or newer—is predominantly used in public or private fertility centers. However, according to a report by AGENAS (National Agency for Regional Health Services) in Italy, dated December 31, 2023, the National Association of Engineers notes that in the diagnosis of serious illnesses, the precision of the machinery can make a crucial difference, and any machine over 10 years old is considered obsolete. In Italy, mammography machines, MRI scanners, and CT scans are used to conduct 65.5 million procedures annually, with 58% being performed in public hospitals and 42% in private facilities contracted by the National Health Service (SSN). These large machines often require replacement due to wear and tear, the nature of their use, frequent breakdowns, maintenance costs, or advancements in cutting-edge technology. It's important to consider that outdated machines can expose patients to inaccurate diagnoses or unnecessary radiation. Contrary to common perception, data shows that accredited private facilities do not have a significantly lower percentage of outdated machinery compared to public facilities. In both sectors, more than one-third of the machines are obsolete. For example, in Lazio, out of 105 mammography machines in public institutions, 35% are outdated, compared to 14% in the private sector. In Campania, 41% of private facilities use machines that are over 10 years old, while only 13% of public facilities do. Additionally, 21% of CT scans in Lazio's public hospitals are obsolete, compared to 38% in private accredited facilities. In Lombardy, 30 out of 72 linear accelerators used in radiotherapy are in the private sector, where 73% of the equipment is outdated, compared to 40% in public institutions. This data highlights that both private and public centers face challenges in keeping their equipment up to date, which has important implications for patient care and diagnostic precision [19].

Private equity (PE) involvement in healthcare, including fertility clinics, has sparked debate over its impact on care quality. The primary concern is that PE firms, driven by the need to generate quick returns on their investments, often prioritize profitability over patient care. This profit-driven approach can affect care quality in several ways:

- **Cost-cutting measures:** To improve profitability, PE-owned clinics may implement aggressive cost-cutting strategies, which can lead to reductions in staffing levels, lower wages, or inadequate investment in technology and facilities. This can negatively impact patient care as overworked staff or outdated equipment may not provide the best possible treatment [23].
- **Increased focus on high-profit services:** PE-backed clinics may prioritize high-margin services, often promoting expensive or unnecessary treatments, such as add-ons in fertility care, that may not have a strong evidence base. This increases revenue but can place financial burdens on patients without significantly improving outcomes [5,11,12].
- **Short-term profit focus:** PE firms typically aim for short-term returns (often within 5-7 years), which can lead to business strategies focused on immediate financial gains rather than long-term patient outcomes. This approach may lead to a transactional relationship between the clinic and patients, prioritizing quantity over quality [8,9,24-27].
- **Reduced autonomy for physicians:** Physicians working in PE-owned clinics may have less autonomy over patient care decisions, with corporate management potentially pressuring them to adhere to business-driven protocols. This can lead to a more standardized, less personalized approach to treatment, which may not always align with a patient's best interests [26,27].
- **Impact on innovation:** While PE can bring in capital to support new technologies and innovations, the pressure to turn a profit quickly might limit investment in more research-intensive, innovative treatments that may take time to become profitable [6,28,29].

While private equity can bring professional management and investment to healthcare, the primary focus on maximizing financial returns often comes at the cost of patient-centered care, raising ethical and quality concerns in sectors such as fertility treatments. These dynamics emphasize the need for robust oversight and patient protections to ensure care quality remains a priority in PE-owned healthcare settings.

### Ethical concerns

Patients may question the ethical practices of private equity (PE)-owned clinics, particularly regarding potential conflicts of interest. If patients perceive that financial motives drive care decisions rather than medical necessity, trust in these clinics can be deeply eroded [3,16]. The perception that clinics prioritize profit over patient care raises ethical issues and may lead patients to lose confidence in the services provided. Additionally, the inclusion of contract clauses allowing mid-procedure price changes presents significant ethical concerns. Such practices undermine transparency, fairness, and trust, tarnishing the reputation of medical centers that employ them. As public assistance retreats from reproductive healthcare, the private sector takes over, often influenced by lobbyists and political compliance. Unproven diagnostic and treatment tools should be banned from both public and private funding. Currently, experimental tools lacking scientific evidence are marketed aggressively, with large financial groups dictating terms to institutions. This shift channels billions of dollars into profit-driven funds, whose primary aim is to reduce costs, increase profits, and exit with high returns after a few years.

### Leadership vs. followership in reproductive healthcare

In this landscape, couples are the primary victims of malpractice, but doctors also suffer, compromising professional integrity for financial rewards. By becoming spokespersons for corporate interests, they lose autonomy and reputational value. Scientific societies, often led by individuals tied to funding entities, reinforce this system, crafting policies for profit-driven goals and reserving scientific forums for industry-aligned voices. This undermines the credibility of the scientific community, transforming it from a source of independent science to a platform for promotional agendas—a decline exemplified by justifications for unproven add-on treatments [17]. Private equity-owned healthcare prioritizes visibility and adherence to directives, favoring professionals who align with institutional goals over those committed to patient-centered, evidence-based care. This approach fosters compliance over innovation, especially in private equity-driven environments.

### Rising conflicts of interest

Fertility clinics focused on profit may neglect patient-centered emotional support, potentially damaging patient trust and satisfaction [16]. Private equity can lead to advancements but raises concerns over commercialization. To maintain trust, PE-backed clinics must emphasize transparency, ethical practices, and prioritize patient-centered care [3,20].

### Ethical considerations and transparency in cost structure and pricing

Transparency plays a crucial role in influencing patient trust in healthcare settings, particularly in fertility clinics. It encompasses clear communication about treatment options, risks, costs, and expected outcomes. Here are some key ways in which transparency fosters trust:

- **Clear communication of treatment options and success rates:** Patients feel more confident and informed when they understand the details of their fertility treatment, the risks involved, and the clinic's success rates. Transparency in disclosing realistic success rates (rather than overly optimistic projections) helps manage patient expectations and reduces the perception of being misled. When clinics clearly explain the limitations and potential outcomes of fertility treatments such as *in vitro* fertilization (IVF) or egg freezing, patients are more likely to trust that the clinic is acting in their best interest, rather than simply aiming to profit from their treatments [3,16].
- **Honesty in pricing and financial transparency:** Fertility treatments are expensive, and the lack of clear pricing can lead to suspicion. Transparency about the full costs of treatments, including any optional add-ons, helps patients plan financially and fosters trust by reducing the chances of unexpected expenses or hidden fees. Patients need to feel that they are paying for necessary, high-quality treatments and not being exploited for profit. Clinics that provide itemized breakdowns of the cost for each treatment

cycle, medications, and additional procedures build credibility by showing that they have nothing to hide financially [3,20]. A lack of clear, upfront pricing can make patients suspicious of the clinic's motivations, especially if they are confronted with unexpected charges for optional procedures that were not fully explained at the outset.

- **Open disclosure of risks and potential complications:** Trust is strengthened when clinics are upfront about the risks and potential complications of fertility treatments. Patients are more likely to trust a clinic that is honest about the possibility of failure, side effects, or the likelihood of needing multiple cycles to succeed. This transparency allows patients to make fully informed decisions, which is central to ethical medical practice [16]. Clinics that emphasize the importance of informed consent and discuss both the chances of success and failure (based on age, health condition, etc.) reduce the potential for disappointment and foster a sense of trust [18].
- **Transparency in ethical practices:** In the case of private or private equity-owned clinics, patients may be concerned that profit motives could overshadow ethical care. Transparency about how decisions are made, particularly in recommending treatments or additional tests, reassures patients that their best interests are prioritized over financial gain. Clear ethical practices contribute significantly to patient trust. Clinics that disclose their financial structure, particularly if owned by private equity, and explain how treatment recommendations are made based on patient needs rather than profit, can help alleviate concerns about conflicts of interest [3].
- **Patient-Centered transparency in emotional and psychological support:** Patients undergoing fertility treatments often experience emotional distress. Clinics that are transparent about the availability of psychological and emotional support services—such as counseling—build trust by demonstrating that they consider the holistic well-being of the patient, not just the medical treatment. A clinic that openly provides information on counseling services, support groups, and other resources to help patients through the emotional challenges of fertility treatments reassures patients of a compassionate and supportive environment [16].
- **Open handling of errors and accountability:** In situations where mistakes occur, such as procedural errors or complications, clinics that are transparent in admitting to errors and taking responsibility tend to maintain or even strengthen patient trust. Openness about how the clinic plans to rectify the issue and prevent future occurrences reassures patients that they are receiving care in a safe and accountable environment [16]. If a clinic reports on incidents openly, investigates root causes, and communicates its actions to the affected patients, it demonstrates commitment to quality improvement and patient safety, thereby enhancing trust.

Transparency in healthcare, particularly in fertility clinics, is essential for building and maintaining patient trust. Clinics that are open about their success rates, pricing, risks, ethical practices, and emotional support systems are more likely to gain the confidence of their patients. Transparency fosters a partnership between the patient and healthcare provider, empowering patients to make informed decisions and trust that their care is based on their best interests rather than commercial motivations.

In addition to transparency, several other factors play a crucial role in influencing patient trust in fertility clinics and healthcare services in general. These include:

- **Ethical concerns in reproductive healthcare:** Clinics with well-regarded specialists and strong success records foster trust among patients seeking complex fertility treatments [20]. However, reliance on metrics like the H-index can misrepresent scientific credibility, emphasizing quantity over quality and risking the devaluation of impactful research [30]. In fertility care, private equity ownership often shifts priorities from patient-centered care to profit, reducing treatment quality and ethical integrity [31,32]. Excessive commercialization has led to a saturation of low-quality studies funded by pharmaceutical and private interests, raising ethical concerns over scientific integrity. Stronger oversight is needed to ensure that research prioritizes public interest and maintains credibility [28].

- **Patient-centered care and trust:** Patients trust clinics that offer personalized, compassionate care, addressing both medical and emotional needs [16,33]. Open communication, accessibility, and respect for patient autonomy enhance trust by fostering involvement in treatment decisions [3].
- **Ethical standards and transparency:** Clinics committed to ethical standards and transparency-avoiding conflicts of interest and recommending only necessary treatments-earn greater patient trust [20]. Success rates should be transparently reported, reflecting case complexities and demographics to build trust. New tools like the SART calculator empower patients to make informed choices without misleading success claims [34].
- **Promotional practices and patient vulnerability:** Legal marketing strategies sometimes blur lines between genuine expertise and image-building, potentially misleading patients. Highlighting doctors as “top specialists” without merit-based assessment can exploit vulnerable patients seeking fertility care.
- **Empathy and holistic support:** Fertility treatments are emotionally taxing, and clinics that provide mental health support through counseling foster trust by prioritizing patient well-being on all levels [3,33].
- **Regulatory compliance and accreditation:** Clinics that meet or exceed national and international regulatory standards, such as those set by the HFEA in the UK or equivalent bodies in other countries, tend to inspire more confidence. Accreditation from reputable organizations signals that the clinic follows best practices and operates at a high level of safety and quality [20]. Clinics that undergo regular inspections and comply with strict regulatory frameworks build trust by ensuring patient safety and adherence to ethical standards [16].

**Hybrid fertility centers:** Hybrid fertility centers, which combine public funding with private management, face challenges related to balancing cost-effectiveness and maintaining high-quality care. Private management, particularly when involving private equity, often prioritizes profitability, leading to ethical concerns in three main areas:

- **Advertising:** These centers may use misleading advertising that exaggerates success rates or misrepresents treatment options to attract patients.
- **Cost reduction:** In the pursuit of profit, centers may cut costs, potentially compromising the quality of care, such as reducing investments in technology or staff, which impacts patient outcomes.
- **Unnecessary treatments:** Hybrid centers may promote add-on services that are not evidence-based, increasing revenue while providing little benefit to the patient.

The primary issue here is ethical: doctors who work for private equity, and whose compensation is tied to profits, should not be allowed to represent national scientific societies in reimbursement negotiations. Even if these individuals have personal integrity, their involvement in negotiations could unfairly benefit their employers, creating an ethical dilemma that undermines the trust and fairness of the process because their interests may not align with patient welfare.

### Key challenges for hybrid centers [3-9]:

- **Balancing cost and quality:** Hybrid centers often struggle to balance public healthcare’s cost constraints with private management’s profitability goals, which can affect the quality of care provided to patients.
- **Managing conflicts of interest:** Due to the dual nature of public and private funding, conflicts of interest may arise, particularly when private ownership seeks to maximize profits by offering unnecessary or costly treatments.
- **Regulatory compliance:** Hybrid centers face the challenge of complying with both public healthcare regulations and private-sector business practices, which can be complex and resource-intensive.



- **Patient management:** Managing both public and private patients can lead to disparities in care, as private patients, who bring in more revenue, may be prioritized over public ones.
- **Profit vs. patient-centered care:** The focus on profitability can lead to a reduction in patient-centered care, with clinics potentially cutting back on essential services like emotional and psychological support to reduce costs.
- **Public trust:** Hybrid centers may struggle to build trust if patients perceive them as being more focused on profit than patient care, especially if they charge higher fees or prioritize private patients.
- **Sustainability of public funding:** Reliance on fluctuating public healthcare budgets can create instability for hybrid centers, leading to potential cuts in services, staff, or technology if public funding decreases.

Overall, hybrid centers need to navigate these challenges carefully, ensuring that they maintain ethical standards and patient trust while balancing the financial demands of the private sector. The question of whether public clinics are more ethical than private clinics depends on various factors, including the ethical standards followed by each clinic, their regulatory oversight, and their approach to patient care. Public clinics may appear more ethical in some aspects, while private clinics can excel in others. Here's a balanced comparison:

- **Public clinics and ethical practices**

- **Access and equity:** Public clinics, governed by regulations, prioritize equal access to fertility treatments regardless of financial status, emphasizing fairness and reducing financial barriers. Treatments are typically based on medical need rather than ability to pay.
- **Profit pressure:** Being non-profit driven, public clinics are less likely to recommend unnecessary procedures or treatments. This focus on medical and ethical care minimizes upselling [3]. However, limited resources may lead to longer wait times and fewer advanced technologies, which can impact patient satisfaction, especially for those seeking immediate or specialized solutions [14,15].
- **Patient-centered with financial incentives:** Private clinics, especially those with private equity backing, often provide faster, personalized care. However, the profit motive can lead to ethical issues, such as recommending costly add-ons that may not be necessary, potentially eroding trust if patients feel pressured into expensive treatments [3].
- **Quality and innovation:** Private clinics typically have more resources for the latest technologies, infrastructure, and staff, which can improve treatment outcomes. Yet, this advantage can create an ethical divide between those who can afford premium services and those who cannot [14,15].
- **Ethical concerns:** Profit motives can sometimes conflict with patient welfare, increasing the risk of conflicts of interest. Financial incentives may drive aggressive treatment recommendations, such as pushing for additional IVF cycles or offering unproven "add-on" services without clear evidence of improved success rates [14-16].

- Fine modulo

- **Regulatory oversight. Compliance and accreditation**

- **Public clinics:** Stronger government oversight typically ensures that public clinics adhere to strict ethical guidelines and reporting standards. This oversight minimizes the risk of malpractice, ensures patient safety, and promotes transparency [16].
- **Private clinics:** Private clinics are still subject to regulatory oversight, but the nature and stringency of this oversight can vary by region and jurisdiction. Clinics with less stringent oversight may face temptations to prioritize profit over ethical [11,12].

- **Informed consent and transparency:** Public clinics tend to follow more standardized processes for informed consent and ensure patients fully understand the risks, costs, and benefits of treatment. This aligns with ethical principles of autonomy and transparency [16].

Some private clinics may prioritize faster treatment processes, which can sometimes compromise the thoroughness of informed consent discussions. There is also the potential for less transparency in pricing structures, where patients may encounter unexpected costs for additional treatments or procedures [3].

- **Resource allocation and patient experience:** Due to budgetary constraints, public clinics may offer a more basic level of care, with longer wait times and fewer opportunities for personalized treatment plans. While this can affect patient experience, public clinics often maintain a clear ethical focus on providing necessary and equitable care [16].

In contrast, private clinics may offer a higher level of personalized care and a faster path to treatment. However, patients may feel that financial incentives influence treatment recommendations, which can undermine the ethical commitment to providing only medically necessary care [11,12].

Public clinics may have an edge in ethical practices due to their emphasis on equitable access, government regulation, and reduced financial conflicts of interest. However, private clinics can also be ethical, especially when they maintain transparency, uphold patient-centered care, and avoid overt commercialization. Ethical concerns in private clinics tend to center around potential conflicts between profit motives and patient care, but this does not necessarily mean that all private clinics operate unethically. The ethical landscape of fertility treatment is complex, and both public and private clinics can offer high-quality, ethical care when they adhere to professional and regulatory standards.

### Success rates and characteristics across fertility clinic types

Success rates in fertility treatments, including IVF, vary between public, private, and hybrid clinics, influenced by factors such as country, clinic expertise, patient demographics (Medical Tourism) and available technologies [22].

- **Public clinics:** Offer affordable, regulated care, ensuring equitable access regardless of income. However, they may face resource constraints, resulting in longer wait times and lower success rates compared to private clinics. For instance, in the UK, the average IVF success rate for women under 35 is around 32%, similar or slightly lower than private clinics. Treatments are often subsidized, as seen in the UK's NHS, but eligibility criteria can restrict access [6,16,29].
- **Private clinics:** Typically have higher success rates due to faster, more personalized care and access to advanced technology, which attracts top specialists. However, the profit-driven model may lead to concerns of over-treatment, where patients are encouraged toward costly add-ons with limited proven benefit [25]. In Europe, private clinics, like those in Spain, report IVF success rates as high as 54% with fresh eggs, though these services are often expensive, accessible primarily to wealthier patients or those with extensive insurance coverage [35].
- **Hybrid clinics:** Blend public funding with private management, aiming to combine affordability with personalized care. While these clinics benefit from public oversight, they also face challenges in balancing profit motives with public health standards. In Italy, for instance, hybrid clinics under public-private partnerships offer government-subsidized but privately managed services, often with faster access to care, though the balance between quality and affordability may vary [33].

**Impact of waiting lists on public clinics:** Public clinics often struggle with long waiting lists due to high demand and limited resources, leading to delays in treatment for time-sensitive fertility issues. This can drive patients toward private clinics, inadvertently benefiting

private equity. Efficient management prioritizing patients by medical need could help avoid detrimental delays, yet such reforms remain challenging for public health administrators to implement [33,36].

**Ethical considerations in clinic management:** Ethical challenges exist across clinic types. Public clinics, under strict regulatory oversight, reduce the risk of over-treatment but may lack the resources to provide the highest quality care. Private clinics face potential conflicts of interest where profit incentives might lead to aggressive treatment recommendations [7,24]. Hybrid clinics must balance profitability with public health mandates, a task that requires careful ethical management to ensure patient welfare isn't compromised [3,13,15].

Overall, each clinic type offers distinct advantages and challenges, with public clinics emphasizing equitable access, private clinics providing advanced personalized care, and hybrid clinics attempting to bridge the two. However, disparities in access and quality continue to grow (Figure 1), particularly in countries like Italy, where socioeconomic factors increasingly influence fertility treatment accessibility [37].

**Key differences across clinic types**

Feature	Public Clinics	Private Clinics	Hybrid Clinics
Cost	Low or subsidized by government	High, often out-of-pocket or insurance	Moderate, a mix of public and private funding
Wait Time	Long due to high demand	Short, faster access to care	Moderate, quicker than public, slower than private
Access to Technology	Basic technologies, fewer advanced options	Advanced technologies available	Variable, depending on funding and management
Success Rates	Lower, affected by resource limits	Higher, due to better resources	Moderate, depends on the balance of resources
Patient-Centered Care	Standardized, less personalized	Personalized, tailored care	Mixed, depending on management priorities

**Table 2:** Each clinic type has its strengths and weaknesses. Public clinics are affordable and equitable but may struggle with long wait times and fewer advanced treatments. Private clinics offer cutting-edge technologies and personalized care but are expensive and may prioritize profit. Hybrid clinics aim to combine the best of both worlds, but their effectiveness can vary depending on the balance between public oversight and private management.

Scientific societies of reproductive medicine in European countries aim to provide comprehensive support in three main areas:

- **Medical education and training:** These societies offer continuous medical education, organizing conferences, workshops, and certifications to ensure healthcare professionals remain updated with the latest advances in reproductive medicine. Their goal is to promote evidence-based practices and improve the quality of care provided to patients. For example, the European Society of Human Reproduction and Embryology (ESHRE) is dedicated to fostering high standards in clinical practice and laboratory performance across Europe.
- **Patient guidance and support:** Societies help patients make informed decisions by providing clear, unbiased information about fertility treatments, including assisted reproductive technologies (ART) like IVF [38]. They offer resources to educate patients about their options, treatment success rates, and potential risks. National societies, such as the British Fertility Society (BFS) and the French Society of Reproductive Medicine, provide public information platforms to guide patients through the complex decision-making process in fertility treatment. Some other societies in other countries does not include this rule.

- **Promotion of ethical practices:** These societies also play a key role in advocating for ethical standards in reproductive medicine. They work to ensure patient safety, equity of access, and transparency in medical practices. The goal is to protect patient interests while maintaining high medical standards. Regulatory guidelines are provided by these societies to ensure that fertility treatments are not influenced by commercial interests, thus avoiding conflicts of interest.

### What societies should avoid:

- **Conflicts of interest:** Medical decisions within fertility societies should be based strictly on clinical evidence rather than influenced by political, commercial or financial interests. It is essential to avoid any undue influence from pharmaceutical companies or private equity firms, especially when these entities have a stake in hybrid medical centers. These conflicts can compromise patient care by increasing the cost of procedures or skewing reimbursement negotiations. To mitigate such risks, transparency is vital, ensuring that funding sources, partnerships, and decision-making processes are openly disclosed to avoid any manipulation that could detract from patient-centered care.
- **Commercialization of fertility care:** Reproductive societies should avoid endorsing practices that prioritize profit over patient-centered care, such as promoting unproven add-ons or unnecessary procedures that increase costs without improving outcomes.

By maintaining clear ethical guidelines, fostering unbiased education, and supporting patients' needs, these societies play a vital role in reproductive healthcare across Europe.

## Conclusion

**Choosing a fertility clinic:** Selecting the right fertility clinic depends on factors like financial considerations, urgency, and the desired level of personalized care. According to HFEA, the ideal clinic combines effective treatment with compassionate staff, clear pricing, and robust emotional support. Their guidance advises patients to consider not only success rates but also transparency, reliability, communication quality, and patient experience, as these significantly contribute to comprehensive care.

**HFEA's guidance for patients:** The HFEA offers a comprehensive guide to help patients choose clinics, advising them to:

- Interpret success rates within context, considering factors like clinic expertise and patient demographics.
- Ensure cost transparency, including potential additional fees.
- Review patient feedback for insights into emotional support and care quality.
- Consider clinic location and ease of access.
- Confirm the availability of specialized treatments.

This information empowers patients to make balanced decisions focused on effectiveness, efficiency, and transparency.

**Support tools in fertility treatments:** The ASRM provides an IVF success calculator, offering realistic expectations based on biological data. This tool assists couples in making informed choices without unrealistic optimism.

**Regulations for private clinics:** Private clinics adhere to stringent regulations for safety and ethics, including:

- **Licensing and accreditation:** Clinics must meet national standards, such as HFEA in the UK with sanctioning authority or CNT in Italy without that authority.
- **Informed consent:** Patients receive comprehensive information on risks, benefits, and costs.
- **Ethical standards:** Clinics avoid unnecessary treatments, prioritizing patient interests.

- **Data transparency:** Clinics report success rates to relevant authorities, like HFEA in the UK and SART in the US.
- **Financial transparency:** Treatment costs are disclosed upfront.
- **Cross-border standards:** Bodies like ESHRE ensure ethical practices across borders.

**Fertility clinic success metrics:** Clinic success rates, particularly for IVF, are assessed through:

- Live birth rate per cycle
- Pregnancy rate per cycle
- Cumulative live birth rate
- Success rates by age group
- Success rate per embryo transfer
- Multiple birth rates.

Understanding these metrics enables patients to make informed treatment decisions.

**Economic evaluations in MAR treatments:** Economic evaluations help optimize resources, balancing cost and effectiveness. Well-structured assessments allow for efficient resource allocation, maximizing success rates.

**Patient-centered care in MAR:** Emotional support is critical, especially when treatments do not lead to a live birth. Comprehensive care includes preparing patients for all outcomes, ensuring support regardless of treatment success.

**Private sector influence on ART:** In countries like Australia, ART is dominated by the private sector, raising concerns over commercialization, treatment necessity, and costs. Stronger oversight is recommended to ensure ethical, patient-centered practices.

**Fertility preservation:** Organizations like FIGO advocate for fertility preservation, especially for patients undergoing treatments that affect reproductive health, urging equal access across all clinic types-public, private, and hybrid [49].

The fertility industry's growth highlights the need to balance financial interests with patient care, ensuring fair access to effective fertility treatments globally [37]. Addressing commercialization, rising costs, and regulatory oversight remains essential in this evolving landscape.

In a recent commentary by a group of esteemed colleagues, all affiliated with private and private equity clinics, a narrative emerged highlighting the achievements of the private sector in advancing the field of reproductive medicine. The authors argued that infertility is "misunderstood" as a disease [41]. They emphasized certain treatment options predominantly offered in private settings, portraying them as non-negative contributions to medical care while advocating for collaboration over competition to reduce stress on couples.

While the call for collaboration is certainly commendable, it is more challenging to accept the notion that infertility should not be considered a disease but something of lesser significance [47-53]. Such a view contradicts the well-established definition endorsed for years by reputable organizations such as the WHO, ICMART, and ASRM [42-48,50-54]. This perspective seems to imply that proposed treatments align more closely with cosmetic enhancements rather than addressing genuine physical and psychological suffering [42-48,50-54]. Who stands to benefit from a paradigm shift that redefines infertility as a "non-disease"? Only private equity, as this reclassification ensures that the sector cannot rely on public funding, which already struggles to address the burden of recognized diseases and certainly cannot extend support to "non-diseases." This leaves the responsibility entirely to the private sector, despite the fact that the suffering caused by infertility can only truly be alleviated with the birth of a child.

Infertility is unequivocally recognized as a disease of the reproductive system, defined by the failure to achieve a clinical pregnancy after 12 months or more of regular, unprotected sexual intercourse or therapeutic donor insemination. For women aged 35 and older, evaluation is recommended after six months due to the natural decline in fertility with age. This classification arises because infertility entails a defect or dysfunction in the reproductive system, caused by factors such as ovulation disorders, structural abnormalities, hormonal imbalances, or male issues like low sperm count or motility.

The WHO defines a disease as a condition that disrupts physiological function, impairs health, or reduces quality of life [47-50]. Infertility meets this definition, as it disrupts normal reproductive function and causes significant emotional, psychological, and social distress. It is frequently associated with underlying conditions such as polycystic ovary syndrome (PCOS), endometriosis, or genetic abnormalities and often leads to psychological issues like anxiety, depression, and relationship stress. Affecting approximately one in six couples worldwide at some point in their reproductive lifespan, infertility has been recognized by the WHO as a public health concern due to its prevalence and the inequities in accessing treatments, particularly in low-resource settings. Management of infertility includes medical interventions (e.g. ovulation induction, hormonal therapy), surgical approaches, and assisted reproductive technologies (ART) like *in vitro* fertilization (IVF). Beyond its medical implications, infertility also has profound social, economic, and cultural impacts, especially in societies where parenthood is highly valued. Recognizing infertility as a disease underscores the importance of: a) comprehensive diagnosis and treatment; b) psychological support, and c) policies ensuring equitable access to fertility care.

Furthermore, one cannot endorse diagnostic and treatment approaches that lack universality or robust evidence, particularly when offered for a fee. While the expertise of many professionals in private equity is indisputable, the pressing need for transparency in delivering information and care options remains unresolved.

Consider the scenario where a private equity executive communicates to a professional, “Either refer all the patients you see to our centers, or we prefer that you not work at our centers”. Such an approach raises two possibilities: either the individual harbors the delusion of managing a facility offering unparalleled diagnostic and therapeutic options, or they are more invested in maximizing dividends than prioritizing the couple’s welfare. This reality persists, and these doubts linger.

Nonetheless, collaboration among those committed to solving the health challenges faced by couples should undoubtedly be pursued and nurtured.

### Authors’ Contributions

Francesco Maria Bulletti and Carlo Bulletti made equal contributions to the conceptualization and design of this work. Francesco Maria Bulletti conducted a comprehensive literature review, taking responsibility for data acquisition, analysis, and interpretation, and drafted the initial manuscript. Carlo Bulletti reviewed and revised subsequent drafts. Both authors provided final approval of the version of the manuscript and jointly addressed any issues related to the accuracy or integrity of the review.

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The authors declare no financial interests.

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