Editorial

Men's Health Infertility Management

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Infertility is a complex and multifaceted issue that affects both men and women, requiring a comprehensive approach that considers the unique challenges and needs of each individual. Globally, infertility affects approximately 15% of the population, with male factor infertility accounting for around 50% of cases, either in isolation or in combination with female factors.[1,2] While conversations and support systems around infertility have traditionally focused on women, the role of men in this narrative is increasingly gaining recognition especially due to critical decline in sperm quality worldwide.[3,4] Global research data indicates a worldwide decline in sperm quality over the last 50 years, with a more than doubling of the decline rate since 2000. The average sperm count dropped from approximately 104 million to 49 million per millilitre from 1973 to 2019, with normal sperm counts considered to be above 40 million per millilitre.[3,5] The decline in sperm counts appears to be accelerating, with an average decrease of 1.16% per year before 2000, increasing to 2.64% per year after 2020.3,4 This trend is consistent across various regions, including South and Central America, Asia, Africa, North America, Europe and Australia.[5,6]

Accordingly, a comprehensive investigation of the male partner is essential in the assessment and management of infertile couples. Lifestyle factors could significantly impact male fertility. Smoking includes e-cigarettes, excessive alcohol consumption and exposure to high temperature water (such as from hot baths or saunas) could negatively affect sperm production and quality. Additionally, conditions like varicocele, which is an enlargement of the veins within the scrotum, could also impair sperm quality. Maintaining a healthy lifestyle, including avoiding smoking and excessive alcohol, and managing heat exposure, could help improve sperm health and overall fertility. [7]

The complexity of male infertility management underscores the need for a multidisciplinary approach, involving healthcare professionals from various specialties, including urologists, andrologists, endocrinologists and reproductive biologists. By leveraging the latest scientific evidence and technological advancements, clinicians could work collaboratively to develop personalized treatment plans which address the unique needs of each patient, ultimately improving the chances of successful conception and parenthood. Along with advancements in assisted reproductive technology, therapies are now available to address male infertility. Patients with an indication of azoospermia can undergo a microsurgical epididymal sperm aspiration (MESA) or micro testicular sperm aspiration (TESE) surgical procedure to obtain sperm from the epididymis or seminiferous tubules.[8] The sperm obtained from the TESE procedure is then frozen and could be used for pregnancy programs through in vitro fertilization (IVF).[9] Through the intracytoplasmic sperm injection (ICSI) technique, sperm with low count (oligozoospermia), reduced motility (asthenozoospermia), or even immotile sperm can be used to fertilize an egg.[10] Male cancer patients who are going to undergo a chemotherapy treatment plan may be recommended to cryopreserve their sperm before starting chemotherapy to preserve fertility.[11]

A crucial aspect of managing male infertility is preventing the decline in sperm quality. Studies have shown that increased sperm deoxyribonucleic acid (DNA) damage could be associated with a higher risk of recurrent pregnancy loss. Research suggests that sperm DNA fragmentation is more common in men from couples with recurrent miscarriages compared to fertile men. Sperm DNA integrity assays can help assess the likelihood of miscarriages, with some studies indicating that they might predict up to 39% of miscarriages. These assays measure the extent of DNA damage in sperm and can be useful in identifying potential fertility issues.[12]

Some strategies to consider include educating boys and adult men about male reproductive health, particularly encouraging a healthy lifestyle and avoiding exposure to chemicals that may harm male fertility. By increasing awareness about the prevalence and causes of male infertility, we can encourage men to prioritize their reproductive health. Healthcare providers play a pivotal role here, providing compassionate care and tailored treatment plans which address individual needs. Moreover, support networks are crucial in destigmatizing male infertility.

Semen analysis is crucial for diagnosing male infertility, but manual sperm analysis can be labor-intensive, subjective, and prone to variability. Artificial intelligence (AI) has shown promise in addressing these issues by automating sperm concentration, motility, and seminal pH assessments using microscopic optical technology. Some studies have reported a high correlation between AI-based and manual methods, while others have found discrepancies. Limitations in current AI research include small sample sizes and unclear evaluation methods, which could affect the reliability and generalizability of findings. Further research is needed to refine AI tools and validate their effectiveness in clinical settings.[13]

Ultimately, infertility is a shared journey—one that requires compassion, understanding, and collective effort. In breaking the silence surrounding men's health in infertility management, we not only empower individuals but also enrich the fabric of our society with a deeper understanding of reproductive health and resilience in the face of adversity. Together, we can redefine the narrative of infertility, embracing inclusivity and compassion every step of the way.

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