

INTERFERENCE OF DIABETES MELLITUS IN HUMAN FERTILITY

Gabriella Dionisio Zampieri

Giovana Cortez Rodolpho (Universidade de Marília); Carolina Soffener Giandon (Universidade de Marília); Isabela Greggio Ferreira (Universidade de Marília); Kelly Cristina Encide de Vasconcelos Donadai (Universidade de Marília)

RESUMO

Introduction: Diabetes mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from a deficiency in insulin production or action. Although its most well-known complications involve the cardiovascular, renal, and neurological systems, growing evidence shows that DM also affects human fertility. In women, it is associated with menstrual irregularities, anovulation, polycystic ovary syndrome, and reduced ovarian reserve, increasing the risk of spontaneous abortions and pregnancy complications. In men, DM compromises spermatogenesis through hormonal, mitochondrial, and inflammatory mechanisms, leading to sperm DNA fragmentation, reduced motility, and erectile dysfunction. Given the high prevalence of DM in individuals of reproductive age, it is essential to understand its impacts on fertility to guide prevention strategies and clinical management. **Objective:** To investigate the impact of DM on human fertility by analyzing the pathophysiological mechanisms and clinical impacts in men and women. **Methods:** An integrative review was conducted in the PubMed, LILACS and Oasis databases using the search terms “Diabetes Mellitus,” “Reproductive Health,” and “Fertility.” The initial search identified 56 articles; after applying inclusion criteria (articles published between 2016 and 2026) and exclusion criteria, as well as full-text review by two independent reviewers, 10 studies were selected for analysis. **Results:** The studies reviewed show that diabetes significantly impairs human fertility. In women with DM2, reduced levels of anti-Müllerian hormone (AMH) and progesterone were observed, reflecting lower ovarian reserve and endometrial readiness, with significantly lower rates of clinical pregnancy and live births, as well as an increased risk of spontaneous abortion (up to twice as high as in controls). In women with DM1, fertility was approximately 20% lower than in the general population, and the rate of congenital malformations in newborns was elevated (7.4% versus 4.2% in the general population). In men, both DM1 and DM2 resulted in worsened semen parameters: reduced sperm concentration, lower progressive motility, and increased DNA fragmentation, with an elevated presence of leukocytes in semen in DM2, indicating an inflammatory process. Sperm motility in DM1 showed a progressive decline after 10 years of disease, associated with mitochondrial dysfunction. Furthermore, diabetics have an approximately 3-fold higher risk of developing erectile dysfunction. These findings reinforce that chronic hyperglycemia, oxidative stress, and systemic inflammation compromise reproductive function at multiple levels, justifying the need for rigorous clinical management and preconception counseling to reduce pregnancy losses and improve reproductive outcomes. **Conclusion:** The impact of diabetes mellitus on human fertility extends beyond the classic complications of the disease, emerging as a challenge that is still underappreciated in clinical practice. The data show that men and women with diabetes have poorer reproductive outcomes, with a higher risk of pregnancy loss and impaired gamete quality. These findings reinforce that reproductive health should be considered an integral part of care for diabetic patients, requiring strict metabolic control and multidisciplinary follow-up to reduce risks and promote quality of life.

Palavras-chave: Diabetes Mellitus; Reproductive Health; Fertility; Infertility.