

Counseling on reproductive aging and oocyte cryopreservation: clinical implications for fertility preservation and reproductive outcomes

Aconselhamento sobre envelhecimento reprodutivo e criopreservação de oócitos: implicações clínicas para a preservação da fertilidade e os desfechos reprodutivos

Asesoramiento sobre envejecimiento reproductivo y criopreservación de ovocitos: implicaciones clínicas para la preservación de la fertilidad y los resultados reproductivos

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Abstract

Reproductive aging significantly impacts female fertility due to the progressive decline in ovarian reserve and oocyte quality. Elective oocyte cryopreservation has emerged as an effective strategy for fertility preservation, particularly for women who choose to postpone childbearing. However, limited awareness of reproductive aging and available fertility preservation options remains a major challenge. This narrative review aims to analyze the clinical relevance of counseling in reproductive aging and oocyte cryopreservation, emphasizing its role in patient decision-making. Evidence suggests that effective physician-patient communication improves patient understanding, aligns expectations, and supports informed reproductive choices. Early counseling may contribute to better reproductive planning and optimize outcomes in assisted reproduction. Incorporating fertility counseling into routine clinical practice is essential to enhance patient autonomy and improve reproductive health outcomes.

Keywords: Oocyte cryopreservation; Reproductive aging; Fertility preservation; Physician-patient communication; Infertility.

Resumo

O envelhecimento reprodutivo impacta significativamente a fertilidade feminina devido à redução progressiva da reserva ovariana e da qualidade dos oócitos. A criopreservação de oócitos emergiu como uma estratégia eficaz de preservação da fertilidade, especialmente para mulheres que optam por postergar a maternidade. No entanto, a limitada conscientização sobre o envelhecimento reprodutivo e as opções de preservação da fertilidade ainda representa um desafio importante. Esta revisão narrativa tem como objetivo analisar a relevância clínica do aconselhamento sobre envelhecimento reprodutivo e criopreservação de oócitos, enfatizando seu papel na tomada de decisão das pacientes. Evidências sugerem que uma comunicação eficaz entre médico e paciente melhora a compreensão, alinha expectativas e favorece decisões reprodutivas informadas. O aconselhamento precoce pode contribuir para um melhor planejamento reprodutivo e otimizar os resultados em reprodução assistida. A incorporação do aconselhamento em fertilidade na prática clínica é essencial para promover a autonomia das pacientes e melhorar os desfechos reprodutivos.

Palavras-chave: Criopreservação de oócitos; Envelhecimento reprodutivo; Preservação da fertilidade; Comunicação médico-paciente; Infertilidade.

Resumen

El envejecimiento reproductivo impacta significativamente la fertilidad femenina debido a la disminución progresiva de la reserva ovárica y de la calidad de los ovocitos. La criopreservación de ovocitos ha surgido como una estrategia eficaz para la preservación de la fertilidad, especialmente en mujeres que deciden retrasar la maternidad. Sin embargo, la limitada conciencia sobre el envejecimiento reproductivo y las opciones disponibles de preservación de la fertilidad sigue siendo un desafío importante. Esta revisión narrativa tiene como objetivo analizar la relevancia clínica del asesoramiento en envejecimiento reproductivo y criopreservación de ovocitos, destacando su papel en la toma de decisiones. La evidencia sugiere que una comunicación médico-paciente eficaz mejora la comprensión, alinea expectativas y favorece decisiones informadas. El asesoramiento temprano puede contribuir a una mejor planificación

reproductiva y optimizar los resultados en reproducción asistida. La incorporación del asesoramiento en fertilidad en la práctica clínica es esencial para promover la autonomía de las pacientes y mejorar los resultados reproductivos.

Palabras clave: Criopreservación de ovocitos; Envejecimiento reproductivo; Preservación de la fertilidad; Comunicación médico-paciente; Infertilidad.

1. Introduction

Oocyte cryopreservation has become an increasingly utilized strategy for reproductive planning, particularly in the context of delayed motherhood (Cobo et al., 2016; Practice Committee of the American Society for Reproductive Medicine, 2018; Smith et al., 2024). Sociodemographic changes, including higher educational attainment and career prioritization, have contributed to the postponement of childbearing (Mills et al., 2011; Garcia et al., 2025).

Reproductive aging is characterized by a progressive decline in ovarian reserve and oocyte quality, leading to reduced fertility potential (Broekmans et al., 2009; te Velde & Pearson, 2002). This process is associated with decreased implantation rates, increased aneuploidy, and reduced success in assisted reproductive technologies (Broekmans et al., 2009).

Despite well-established evidence, many women still overestimate their reproductive lifespan and have limited knowledge about age-related fertility decline (Pedro et al., 2018; Garcia et al., 2025).

In this context, effective counseling and physician–patient communication play a crucial role in promoting informed reproductive decisions and aligning patient expectations with clinical reality (Hå & Longnecker, 2010; Practice Committee of the American Society for Reproductive Medicine, 2018; Smith et al., 2024).

This study aims to analyze the role of doctor–patient communication in counseling on reproductive aging and fertility preservation.

2. Methods

A bibliographic research (Snyder, 2019) was conducted in a qualitative investigation with limited systematization (Risemberg et al., 2026; Pereira et al., 2018). This study consists of a narrative literature review (Fernandes et al., 2023; Rother, 2007; Smith et al., 2024).

The literature search was conducted in PubMed, Scopus, and Google Scholar databases, including studies published in the last 10 years using the descriptors “reproductive aging,” “oocyte cryopreservation,” “fertility preservation,” and “physician–patient communication,” combined with Boolean operators AND and OR. Original studies, systematic reviews, clinical guidelines, and recent evidence were included (Garcia et al., 2025). Articles not directly related to the topic or without full-text access were excluded.

3. Results and Discussion

Reproductive aging and its impact on fertility

Female reproductive aging is directly associated with a progressive decline in ovarian reserve and oocyte quality (Broekmans et al., 2009). From the age of 30, a gradual reduction in fertility is observed, becoming more pronounced after 35 years (te Velde & Pearson, 2002; Smith et al., 2024).

This decline is linked to a reduction in the number of primordial follicles, increased rates of chromosomal abnormalities, and decreased embryonic competence (Broekmans et al., 2009). As a result, infertility rates increase, along with higher rates of spontaneous miscarriage and implantation failure.

Despite these well-established findings, many women still overestimate their chances of conception at advanced ages, highlighting the need for early educational and counseling strategies (Pedro et al., 2018; Garcia et al., 2025).

Oocyte cryopreservation as a reproductive planning strategy

Oocyte cryopreservation has emerged as an effective strategy for fertility preservation, particularly for women who choose to delay motherhood (Cobo et al., 2016; Smith et al., 2024).

The technique allows for the retrieval and storage of oocytes at younger ages, when oocyte quality is higher. Evidence indicates that age at the time of oocyte retrieval is one of the main predictors of future reproductive success, directly influencing the likelihood of live birth (Cobo et al., 2016; Practice Committee of the American Society for Reproductive Medicine, 2018; Goldman et al., 2017; Doyle et al., 2016).

Predictive models have been developed to estimate the probability of live birth based on patient age and the number of oocytes retrieved, reinforcing the importance of early decision-making in elective fertility preservation (Goldman et al., 2017).

However, the use of this technique remains limited by factors such as cost, restricted access to specialized services, and insufficient patient awareness (Pedro et al., 2018; Garcia et al., 2025).

Therefore, appropriate medical counseling is essential to align expectations, support informed decision-making, and provide realistic information regarding reproductive outcomes (Hå & Longnecker, 2010; Smith et al., 2024).

The role of physician–patient communication in reproductive counseling

Physician–patient communication plays a central role in decision-making in reproductive health. A clear, empathetic, and evidence-based approach contributes to better patient understanding and supports informed choices (Hå & Longnecker, 2010; Smith et al., 2024).

However, studies indicate that many healthcare professionals do not routinely address reproductive aging and fertility preservation, which may result in delayed decision-making and reduced effectiveness of available interventions (Practice Committee of the American Society for Reproductive Medicine, 2018; Garcia et al., 2025).

Communication should be individualized, taking into account clinical, emotional, and sociocultural factors. Additionally, the use of accessible language and educational strategies is essential to ensure patient comprehension.

Despite advances in fertility preservation, there remains a gap between available technologies and patient awareness, highlighting the need for systematic reproductive counseling in clinical practice (Pedro et al., 2018; Garcia et al., 2025).

Clinical Implications

The incorporation of counseling on reproductive aging into routine clinical practice should be regarded as a preventive strategy in women’s reproductive health care. Healthcare professionals, particularly those working in primary care and gynecology, should proactively address reproductive planning, even in the absence of immediate fertility concerns (Practice Committee of the American Society for Reproductive Medicine, 2018; Smith et al., 2024).

Health education, when combined with effective physician–patient communication, plays a crucial role in improving fertility awareness and reproductive literacy, supporting informed decision-making, and mitigating the impact of age-related infertility (Hå & Longnecker, 2010; Garcia et al., 2025). Early reproductive counseling should therefore be considered an essential component of preventive reproductive health care.

Despite the increasing availability of fertility preservation techniques, a significant gap persists between scientific knowledge and patient awareness. Many women still seek counseling at advanced reproductive ages, when the effectiveness of

available interventions is substantially reduced. This scenario reinforces the need for earlier, structured, and proactive reproductive counseling in clinical practice (Pedro et al., 2018; Garcia et al., 2025).

Clinical evidence demonstrates that the outcomes of oocyte cryopreservation are strongly associated with patient age and the number of vitrified oocytes, with higher success rates observed in younger women (Doyle et al., 2016). Furthermore, predictive models have shown that both factors significantly influence the likelihood of achieving live birth, highlighting the importance of timely decision-making in elective fertility preservation (Goldman et al., 2017; Doyle et al., 2016).

Current clinical guidelines emphasize the importance of fertility preservation counseling, particularly for women at risk of delayed childbearing or exposure to gonadotoxic treatments, reinforcing its role as a key element in comprehensive reproductive care (Ethics Committee of the American Society for Reproductive Medicine, 2019; Practice Committee of the American Society for Reproductive Medicine, 2018).

Limitations

This study has limitations inherent to narrative reviews, including potential selection bias and the absence of a systematic methodology (Rother, 2007; Snyder, 2019). However, it provides a comprehensive overview of current evidence and highlights clinically relevant aspects of reproductive counseling. Despite these limitations, narrative reviews remain valuable for synthesizing broad topics and supporting clinical reflection, especially in areas requiring integrative interpretation of evidence (Fernandes et al., 2023; Risemberg et al., 2026).

4. Conclusion

Reproductive aging plays a critical role in female fertility decline, and oocyte cryopreservation represents a valuable strategy for fertility preservation (Broekmans et al., 2009; Cobo et al., 2016). Effective physician–patient communication is essential to support informed decision-making and optimize reproductive outcomes (Hå & Longnecker, 2010; Smith et al., 2024).

The integration of reproductive counseling into routine clinical practice is fundamental to improving fertility awareness and patient autonomy, particularly in the context of delayed childbearing (Practice Committee of the American Society for Reproductive Medicine, 2018; Garcia et al., 2025).

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