



IMPACT OF STRESS ON FEMALE INFERTILITY: UNANI AND MODERN PERSPECTIVES

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ABSTRACT

Female infertility is a multifactorial condition influenced by physiological, environmental, and psychosocial factors. Stress has emerged as a critical contributor to reproductive dysfunction across traditional and contemporary medical frameworks. Modern biomedical research demonstrates that stress activates the hypothalamic–pituitary–adrenal (HPA) axis and sympathetic nervous system, leading to elevated cortisol and catecholamines that disrupt gonadotropin-releasing hormone (GnRH) pulsatility, impair ovulation, alter menstrual cyclicity, reduce endometrial receptivity, and interfere with implantation. Chronic stress also modulates inflammatory pathways and uterine blood flow, further compromising fertility potential. In Unani medicine, stress (Iztirāb-e-nafsānī) is believed to disturb Harārat Gharīziyya (innate heat), Quwwāt (vital faculties), and Mizāj (temperament), resulting in abnormal humour formation, weakening of uterine faculties, menstrual irregularities and impaired reproductive capacity. Excessive emotional distress is described to cause cooling or imbalance of uterine temperament (Sū'-i-Mizāj), leading to poor ovum maturation, inadequate retention of the embryo, and infertility. By integrating these perspectives, it becomes evident that both Unani and modern systems recognize stress as a potent disruptor of female reproductive function, though through distinct explanatory models, neuroendocrine pathways in modern medicine and humoral-temperamental imbalance in Unani theory. Understanding these converging insights highlights the need for infertility management approaches that combine biomedical evaluation with lifestyle modification, psychotherapeutic support, and Unani regimens aimed at restoring balance and reproductive health.

KEYWORDS: Infertility, Stress, HPA axis, Cortisol, Reproductive dysfunction, Psychosocial factors, Harārat-e-Gharīziyya, Akhlāt-e-Fāsida, Su'-e- Mizāj-i- Raḥim, Quwat-e-Raḥim.

INTRODUCTION

The American Society of Reproductive Medicine (ASRM) recommends initiating an evaluation for infertility after failing to achieve pregnancy within 12 months of unprotected intercourse or therapeutic donor insemination in women younger than 35 years or within 6 months in women older than 35.^[1]

Infertility is a multifactorial condition influenced by the complex interaction of biological, environmental, and psychosocial factors.^[2,3]

Biological determinants include endocrine dysfunction, ovulatory disorders, tubal pathology, uterine abnormalities, genetic factors, and age-related decline in reproductive capacity.^[10,11]

Environmental factors influence such as exposure to toxins, endocrine-disrupting chemicals, lifestyle habits (e.g., smoking, alcohol intake, obesity), occupational hazards, and nutritional deficiencies further impair reproductive function.^[10]

Psychosocial factors including chronic stress, anxiety, depression, socio-cultural pressures, and relationship

dynamics can disrupt the neuroendocrine axis, alter hormonal balance, and negatively affect sexual health and treatment adherence.^[4,16] Together, these domains interact synergistically, making infertility a complex health issue requiring holistic and multidisciplinary evaluation.^[3,10]

According to WHO stress can be defined as a state of worry or mental tension caused by a difficult situation. Stress is a natural human response that prompts us to address challenges and threats in our lives. Everyone experiences stress to some degree. The way we respond to stress, however, makes a big difference to our overall well-being.^[4]

Stress affects both the mind and the body. A little bit of stress is good and can help us perform daily activities. Too much stress can cause physical and mental health problems. Learning how to cope with stress can help us feel less overwhelmed and support our mental and physical well-being.^[4,16]

Stress, whether psychological, emotional, or physiological has long been recognized as an important contributor to reproductive dysfunction.^[5,6,7] Modern biomedical research identifies clear neuroendocrine pathways through which stress impairs ovulation, menstrual regularity, hormonal balance, implantation, and overall fertility potential.^[5,11,12]

Discussion on Impact of Stress on Female Infertility

Stress, whether psychological, emotional, or physiological has long been recognized as an important contributor to reproductive dysfunction.^[5,7] Modern biomedical research identifies clear neuroendocrine pathways through which stress impairs ovulation, menstrual regularity, hormonal balance, implantation, and overall fertility potential.^[5,11,12,13] Traditional Unani medicine, similarly acknowledges emotional disturbances (gham, khauf, huzn, afsurdgi) as etiological factors for Uqr (infertility) and disorders of the uterus (Zof-e-Rahim, Su'-e-Mizaj-i-Rahim).^[19,23]

Modern Biomedical Understanding of Stress and Female Infertility

Stress and the HPA–HPO Axis Interaction

Modern theories focus on the relationship between the hypothalamic-pituitary-adrenal (HPA) axis and the hypothalamic-pituitary-ovarian (HPO) axis. Under stress, the hypothalamus increases secretion of corticotropin-releasing hormone (CRH) and arginine vasopressin, stimulating the pituitary to release adrenocorticotrophic hormone (ACTH), ultimately elevating cortisol levels.^[5] Elevated cortisol inhibits normal pulsatile secretion of gonadotropin-releasing hormone (GnRH) and disrupts luteinizing hormone (LH) and follicle-stimulating hormone (FSH) secretion, impairing follicular development and ovulation.^[5,11]

Chronic stress leads to sustained suppression of GnRH pulses, often resulting in anovulatory cycles, luteal phase defects, or amenorrhoea.^[5,12] β -endorphin levels also rise during stress, further inhibiting GnRH release.^[5] These molecular mechanisms provide a clear biological explanation for stress-induced menstrual irregularities observed clinically.

Sympathetic Activation and Uterine Blood Flow

Stress activates the sympathetic nervous system, increasing catecholamines such as norepinephrine. Excess catecholamines constrict uterine arteries, reducing uterine perfusion. Studies demonstrate that reduced uterine blood flow correlates with lower implantation success and adverse endometrial receptivity.^[6,7] This hemodynamic effect is particularly relevant to women undergoing assisted reproductive technologies (ART), where endometrial receptivity is a key determinant of outcome.^[7,13]

Impact on Endometrial Receptivity and Implantation

High cortisol levels alter expression of endometrial integrins, leukemia inhibitory factor (LIF), and other key molecules essential for implantation. Stress also affects uterine natural killer (uNK) cell function, cytokine profiles, and inflammatory pathways that determine successful embryo implantation.^[13,14]

Oxidative Stress and Oocyte Quality

Stress increases circulating reactive oxygen species (ROS) and decreases antioxidant capacity. Oxidative stress damages ovarian follicles, affects oocyte maturation, and impairs chromosomal alignment during meiosis. Excess ROS also compromises early embryonic development and may contribute to miscarriage.^[15,14]

Stress and ART/IVF Outcomes

The relationship between stress and IVF outcomes is complex. Some studies show no association, while others show significant reductions in pregnancy and live birth rates among highly stressed women. A recent review concluded that stress appears to differentially affect various stages of ART, particularly oocyte maturation and implantation.^[16,18]

Women with high anxiety during oocyte retrieval or embryo transfer demonstrate lower implantation rates. Follicular fluid cortisol levels, when elevated, have been associated with poorer fertilization outcomes.^[18]

Perspective of Unani Medicine on Stress and Female Infertility (Uqr)

In Unani medicine, every organ functions through specific Quwā (faculties or powers). The uterus (Raḥim) has specialized faculties that govern conception, implantation, nourishment, and maintenance of pregnancy. These faculties operate under the influence of Harārat Gharīziyya (innate heat) and a balanced Mizāj (temperament).^[4,1] Emotional Disturbances as Etiological Factors.

There are three major uterine faculties essential for fertility.

1. Quwwat-e-Jāzbia (Attractive Faculty)
2. Quwwat-e-Māsika (Retentive Faculty)
3. Quwwat-e-Ghādhīyah (Nutritive Faculty)^[19,23]

Effect of Stress on Psychic Faculties and Innate Heat

Stress is classified in Unani medicine under *Asbāb-e-Nafsāniyah* (psychological causes). Emotional disturbances such as excessive grief, fear, anxiety, worry, and depression first weaken the psychic faculties (*Quwwat-e-Nafsāniyah*) of the brain. Since the brain regulates and distributes innate heat throughout the body, its weakness leads to impaired regulation and gradual depletion of *Harārat-e-Gharīziyya*. As a result, the entire body especially the reproductive organs receive insufficient vital heat.^[19,23]

Stress Increases Coldness (*Burūdat*) in the Body

Under chronic stress, circulation becomes sluggish, metabolism slows down, and muscular tension increases. In Unani terms, this reflects an increase in cold temperament (*Burūdat*) and a decline in natural heat. As coldness predominates, the uterus becomes less active and poorly nourished. A cold uterus (*Burūdat-e-Raḥim*) loses the warmth necessary for ovulation, implantation, and maintenance of pregnancy.^[20,21,22,23]

Stress Promotes Formation of Abnormal Humours That Suppress Heat

Stress leads to excessive production of abnormal humours (*Akhlāt-e-Fāsida*), particularly.

Balgham (cold and moist)

Sawda (cold and dry)

Both of these humours suppress and weaken innate heat. Their accumulation obstructs uterine blood vessels, reduces nourishment to reproductive tissues, and further diminishes *Harārat-e-Gharīziyya*. This creates an unfavourable uterine environment for conception.^[20,21,22,23]

Stress Causes Energy Depletion and Weak Digestion

Chronic stress disturbs sleep, reduces appetite, and weakens digestion. According to Unani principles, weak digestion leads to poor blood formation, and poor blood results in reduced innate heat. Since *Harārat-e-Gharīziyya* is maintained by properly formed blood and nutrition, continuous stress gradually exhausts this vital energy.^[19,22]

Unani and modern Therapeutics for Stress

Stress management

Effective stress management is essential for optimizing fertility and improving overall reproductive outcomes. A combination of psychological therapies, lifestyle changes, mind–body practices, medical support, and a strong social environment plays a pivotal role in reducing stress and enhancing fertility potential. Incorporating stress management programs into

infertility care can significantly improve the success of both natural conception and assisted reproductive techniques (ART).^[16,18]

Ilāj-bil-Tadbīr (Regimen Therapy)^[19,24]

Unani medicine emphasizes lifestyle and behavioral interventions that directly target stress:

- regulation of sleep and wakefulness
- mental relaxation and avoidance of anxiety-provoking situations
- massage (*Dalak*) to improve circulation
- medicated baths and steam (*Hammam*)
- moderate exercise
- aromatherapy using pleasant fragrances

These interventions aim to correct disturbed *Mizāj* and strengthen the reproductive system.

Ilāj-bil-Ghizā (Dietary Therapy)^[19,20,21,22,23,24]

Foods that enhance warmth (*Harārat*) and vitality are recommended, including:

- nuts (almond, pistachio)
- milk and ghee
- dates and figs
- warming herbs and spices

These nourish the reproductive tissues and restore energetic balance.

Ilāj-bil-Dawā (Pharmacotherapy)^[19,24]

Herbal uterine tonics (*Muqawwiyāt-e- Raḥim*) include.

- *Asgand* (*Withania somnifera*)
- *Khulanjān* (*Alpinia galanga*)
- *Filfil Siyāh* (*Piper nigrum*)
- *Tukhm-e-Karafs* (*Apium graveolens*)

These herbs possess temperament-correcting, adaptogenic, anti-stress, and tonic properties.

Compound formulations such as.

- *Majoon Supari Pak*
- *Majoon Falasfa*
- *Itrifal Ustukhuddus*

are used to strengthen uterine musculature, improve hormonal balance, and relieve emotional disturbances.

Integrating Modern and Unani Perspectives

Both systems recognize that stress disturbs physiological balance and directly harms reproductive function. While modern medicine emphasizes endocrine and neurobiological pathways, Unani theory explains similar phenomena through *Mizāj*, *Harārat*, and *Quwā*. Despite differing frameworks, the convergence is evident.

Modern Mechanism	Unani Explanation
Cortisol suppresses GnRH/LH/FSH	Weakening of Harārat Gharīziyya impairs ovarian function
Sympathetic vasoconstriction reduces uterine blood flow	Disturbed Mizāj and vascular obstruction by morbid humours
Altered endometrial receptivity	Su ³ -e-Mizāj-e-Rahim, weak Quwwat-e-rahim
Oxidative stress damages follicles	Diminished vitality of reproductive organs
Stress-relieving interventions improve outcomes	Unani Tadbīr, Ghizā, and Muqawwiyāt

The complementarity of these perspectives provides a multidimensional understanding of stress-related infertility.

CONCLUSION

Stress is a significant but often under-recognized contributor to female infertility. Modern biomedical science demonstrates that stress disrupts the HPA-HPO axis, impairs ovulation, alters endometrial receptivity, and increases oxidative stress. Unani medicine, although grounded in a different philosophical system, has long acknowledged the detrimental effects of emotional disturbances on reproductive health. Unani concepts such as Su³-e-Mizāj-e-Rahim, Harārat Gharīziyya, and Zof-e-Rahim parallel modern physiological insights regarding hormonal imbalance and uterine dysfunction.

The integration of both perspectives offers a richer understanding of the multifactorial role of stress in infertility. Combining stress-management interventions, lifestyle modifications, and evidence-based Unani therapeutics may enhance reproductive outcomes. Further research is needed to validate these approaches through rigorous clinical and translational studies.

REFERENCES

- Practice Committee of the American Society for Reproductive Medicine. Definitions of infertility and recurrent pregnancy loss. *Fertil Steril*, 2020; 113(3): 533-5.
- Zegers-Hochschild F, Adamson GD, Dyer S, Racowsky C, de Mouzon J, Sokol R, et al. The International Glossary on Infertility and Fertility Care, 2017. *Hum Reprod*, 2017; 32(9): 1786-801.
- Boivin J, Bunting L, Collins JA, Nygren KG. International estimates of infertility prevalence and treatment-seeking: potential need and demand for infertility medical care. *Hum Reprod*, 2007; 22(6): 1506-12.
- WHO. Stress: A global health challenge. World Health Organization; 2021. Available from: <https://www.who.int>
- Rivier C, Rivest S. Effect of stress on the activity of the hypothalamic-pituitary-gonadal axis: peripheral and central mechanisms. *Biol Reprod*, 1991; 45(4): 523-32.
- Dobson H, Smith RF. What is stress, and how does it affect reproduction? *Anim Reprod Sci*, 2000; 60-61: 743-52.
- Sanders KA, Bruce NW. Psychosocial stress and ovarian function in women. *Horm Behav*, 1997; 31(2): 195-205.
- Nepomnaschy PA, Welch KB, McConnell DS, Low BS, Strassmann BI, England BG. Cortisol levels and very early pregnancy loss in humans. *Proc Natl Acad Sci USA*, 2006; 103(10): 3938-42.
- Buck Louis GM, Lum KJ, Sundaram R, Chen Z, Kim S, Lynch CD, et al. Stress reduces conception probabilities across the fertile window: evidence in support of relaxation. *Fertil Steril*, 2011; 95(7): 2184-9.
- Palomba S, Daolio J, Romeo S, Battista G, Marci R, La Sala GB. Lifestyle and fertility: the influence of stress and quality of life on female fertility. *Reprod Biol Endocrinol*, 2018; 16(1): 113.
- Schliep KC, Mumford SL, Vladutiu CJ, Ahrens KA, Perkins NJ, Sjaarda LA, et al. Perceived stress, reproductive hormones, and ovulatory function: a prospective cohort study. *Epidemiology*, 2015; 26(2): 177-84.
- Xiao E, Ferin M. Stress and the menstrual cycle in nonhuman primates: effects of stress on gonadotropin secretion. *Endocrinology*, 1997; 138(5): 2054-63.
- Wang H, Dey SK. Roadmap to embryo implantation: clues from mouse models. *Nat Rev Genet*, 2006; 7(3): 185-99.
- Melo AS, Rosa-e-Silva AC, Rosa-e-Silva JC, Ferriani RA. Stress and reproductive function in women. *Clinics*, 2020; 75: e1624.
- Agarwal A, Gupta S, Sharma RK. Role of oxidative stress in female reproduction. *Reprod Biol Endocrinol*, 2005; 3: 28.
- Rooney KL, Domar AD. The relationship between stress and infertility. *Dialogues Clin Neurosci*, 2018; 20(1): 41-7.
- Casper RF. It's time to pay attention to the endometrium. *Fertil Steril*, 2011; 96(3): 519-21.
- Li Y, Yu S, Huang C, Lian R, Chen C, Wang Q, et al. Anxiety and stress in IVF patients affect the outcome: a systematic review. *J Psychosom Obstet Gynaecol*, 2020; 41(2): 94-104.
- Ansari AP, Hakeem MA. Introduction to Unani Medicine. New Delhi: CCRUM, 2008.
- Ibn Sina (Avicenna). *Al-Qanun fi'l-Tibb (The Canon of Medicine)*. Book I-III. New Delhi: Jamia Hamdard; 1998 (reprint).
- Jurjani AH. *Zakhira Khawarzam Shahi*. Vol. 6. Tehran: Dairat al-Ma'arif, 2012.
- Razi ABM. *Al-Hawi fi'l-Tibb*. Vol. 10. Hyderabad: Dairatul Ma'arif, 1962.
- Khan MA. *Akseer-e-Azam*. Lucknow: Munshi Naval Kishore, 1903.

24. CCRUM. Standard Unani medical terminology. New Delhi: Central Council for Research in Unani Medicine, 2012.