Article

The Impact of Relaxation Massage on Ovulation and Sexual Appetite

Lucian Șerbănescu * , Vadym Rotar , Mihai Mitran , Sebastian Mirea , Paris Ionescu , Elena Valentina Ionescu

Posted Date: 8 January 2025

doi: 10.20944/preprints202501.0570.v1

Keywords: ovulation-inducing; sexual appetite; fertility; hormonal balance

 doi:10.20944/preprints202501.0570.v1

Article

The Impact of Relaxation Massage on Ovulation and Sexual Appetite

Lucian Șerbănescu [1,2,*], Vadym Rotar [1,2], Mihai Mitran [3], Sebastian Mirea [2], Paris Ionescu [1,2] and Elena-Valentina Ionescu [1,4]

[1] "Ovidius" University of Constanta, Romania
[2] County Clinical Emergency Hospital "Sf. Ap. Andrei", Constanta, Romania
[3] "Carol Davila" University of Medicine and Pharmacy Bucharest
[4] Department of Rehabilitation, Balneal and Rehabilitation Sanatorium of Techirghiol, Romania
* Correspondence: lucian_trocadero@yahoo.com

Abstract: Massage therapy, a traditional practice, has garnered interest for its potential applications in reproductive health, particularly in enhancing fertility and hormonal balance. This study investigates the impact of ovulation-inducing massage on monthly ovulation rates among women seeking fertility assessment. **Methods**: Conducted at Santerra Medical Center, this three-month study involved 60 women divided into two groups: one receiving massage therapy (n=32) and a control group without massage (n=28). Ovulation was monitored using transvaginal ultrasound and urinary ovulation tests. **Results**: The massage group exhibited a monthly ovulation rate of 75%, compared to 57.1% in the control group. Additionally, 18.7% of the massage group experienced intermittent ovulation, slightly higher than 17.8% in the control group. Notably, the percentage of women with no ovulation was lower in the massage group. **Discussion**: The findings suggest that massage may enhance ovulatory function through increased blood flow to the reproductive organs, reduced cortisol levels, and improved lymphatic drainage. Previous literature supports the benefits of massage in various health conditions, including reproductive health. **Conclusions**: Despite literature suggesting that 80-90% of women ovulate monthly, our study found a rate of only 57.1%, potentially linked to stress factors, nutrition, and gynecological conditions. However, massage therapy showed a significant positive effect on ovulation induction, underscoring its value in enhancing conception rates by reducing stress and improving local blood flow and increasing the sexual appetite. These results highlight the potential of integrative approaches like massage therapy in supporting reproductive health.

Keywords: ovulation-inducing; sexual appetite; fertility; hormonal balance

1. Introduction

Massage therapy, an ancient therapeutic practice, has been widely employed to enhance physical and mental well-being through the stimulation of circulation, muscular relaxation, and stress reduction. In recent years, research has increasingly focused on its applications in reproductive health, utilizing massage as a complementary intervention to support fertility and hormonal balance. Among its numerous benefits, the potential role of massage in inducing ovulation requires further exploration.

The practice of massage has its origins in ancient civilizations, where it served both therapeutic and cultural purposes [1–4]. In Ancient Egypt, hieroglyphics discovered in tombs indicate that massage was a significant component of healing practices, performed by skilled practitioners to relieve pain and promote relaxation [1]. Traditional Chinese Medicine, with texts dating back to 3000 B.C., describes techniques such as Tui Na, which focuses on manipulating energy (Qi) and enhancing blood flow to restore health [2]. In Ancient Greece and Rome, figures like Hippocrates endorsed

 doi:10.20944/preprints202501.0570.v1

massage as a method to improve health and treat ailments, while the Romans integrated it into their daily lives, using it in baths and spas for relaxation and recovery [3]. Ayurveda in India has also incorporated massage for centuries, emphasizing its role in balancing the doshas (bodily energies) and fostering overall well-being [4].

General benefits of massage

Massage therapy offers a diverse array of benefits for overall health, which include:

Improvement of blood circulation: massage facilitates increased blood flow throughout the body, particularly to the reproductive organs. Enhanced circulation ensures an augmented supply of oxygen and essential nutrients to the ovaries, uterus, and other structures critical for reproductive function [5,6].

Reduction of muscular tension and relaxation of the body: by alleviating muscular tension and mitigating stress, massage contributes to the homeostasis of the nervous system, which can positively influence hormonal equilibrium. Elevated stress levels have been documented to adversely affect the menstrual cycle and ovulation [5,6].

Stimulation of lymphatic drainage: massage promotes lymphatic drainage, aiding in the expulsion of toxins and metabolic waste from the body, thereby fostering an optimal environment for reproductive functions [6,7].

Hormonal regulation: abdominal massage and fertility-specific techniques can stimulate natural hormonal processes, encouraging the production of hormones involved in ovulation, such as estrogen and progesterone. Through targeted massage techniques, the flow of energy and blood in the abdominal region may sustain hormonal balance [8,9].

Fertility massage and ovulation induction

Fertility massage represents a specialized form of manual therapy that concentrates on the lower abdomen, ovaries, uterus, and other reproductive structures. Its primary objectives are to enhance the health of the reproductive system, optimize its functionality, and promote the natural ovulation process. Specific techniques include:

Deep abdominal massage: this technique is employed to enhance pelvic circulation and release tension in the connective tissues surrounding the uterus and ovaries. Such interventions may create a conducive environment for ovulation [7].

Maya abdominal therapy: this traditional Mayan technique focuses on the repositioning of abdominal and pelvic organs, which, if misaligned, can adversely affect fertility. Its aim is to restore the proper alignment of organs and improve blood and lymphatic flow, thereby supporting ovulation [9].

Acupressure: when combined with massage, acupressure—applying targeted pressure to specific acupoints—may stimulate the endocrine system and promote the release of hormones essential for ovulation induction.

Reflexology: this practice involves the stimulation of specific reflex points located on the feet and hands, associated with reproductive organs. Reflexology may assist in balancing the body's energy and supporting a regular menstrual cycle [8,9].

Impact of massage on fertility

A growing body of literature suggests that massage therapy, through stress reduction and enhanced circulation, may support fertility, particularly in women facing conception difficulties attributed to ovulatory dysfunction. While massage may not universally induce ovulation, it serves as a valuable adjunct in the promotion of reproductive health, particularly when integrated with other therapeutic modalities and medical interventions [7–9].

Additional benefits of massage in reproductive health

Fertility massage, in addition to its potential role in facilitating ovulation, may offer several important benefits [7,9]. Abdominal massage has been shown to improve uterine tone and help

 doi:10.20944/preprints202501.0570.v1

prevent complications such as a tilted uterus or inadequate blood flow to the region [7,9]. Women experiencing severe dysmenorrhea may find relief through abdominal massage, which promotes muscle relaxation and alleviates cramping [9]. Massage therapy may also assist women postpartum by helping to restore hormonal balance and supporting the recovery of overall reproductive health [8]. Although there is limited conclusive evidence for massage as a sole method for inducing ovulation, its integration into a broader reproductive health strategy—including balanced nutrition, regular physical activity, and stress management—may enhance the likelihood of successful conception [7–9].

2. Materials and Methods

This prospective study was conducted at the Santerra Medical Center, Constanta, Romania. It aimed to monitor ovulation in a cohort of 70 patients, aged between 19 and 35 years, seeking fertility assessment for conception purposes. The study lasted three months, allowing for a detailed evaluation of hormonal responses and ovulation.

The study was approved by Santerra Medical Center Ethical Committee (approval no.002, 17 January 2024) and complied with the revised ethical guidelines of the Declaration of Helsinki. All patients entered into the study agreed to participate and signed an informed consent form after all the risks and benefits of the therapy were explained to them. They had the opportunity to stop participating at any time and their data was confidential.

Pregnant patients, menopausal patients, or patients using antidepressant, ovulation-inducing, contraceptive, or any type of hormonal or nonhormonal medication that could have influenced ovulation were not included in the study. Eight patients who became pregnant during the study were excluded from the study and 2 patients chose to withdraw from the study with their own consent.

The cohort consist of 60 patients, who have chosen to monitor ovulation using the combined method that included:

Transvaginal ultrasound: each patient underwent transvaginal ultrasound immediately after menstruation (day 5 of the menstrual cycle) and on day 12 after menstruation. These evaluations allowed for the observation of ovarian follicles and estimation of the timing of ovulation.

Urinary ovulation tests: from day 10 to day 16 of the menstrual cycle, patients performed urinary ovulation tests every morning upon waking. These tests were used to determine the concentration of luteinizing hormone (LH), which indicates the approach of ovulation.

Among the 60 patients, the 32 patients in the corresponding subgroup agreed to participate in relaxation massage sessions, scheduled twice a week throughout the entire monitoring period. These sessions aimed to reduce stress and create a conducive environment for ovulation.

The 28 patients in the other subgroup were monitored monthly for ovulation using urinary ovulation tests and transvaginal ultrasound but did not participate in the massage interventions. The results of the two subgroups were compared to assess the impact of relaxation massage on ovulation monitoring and conception rates.

Patients in the corresponding subgroup agreed to participate in relaxation massage sessions,, at the end of the study period, filled out a form in which they were asked if the relaxation massage had any influence on their sexual performance and to what extent: important, moderate, mild or no result in increasing the sexual appetite.

Data Analysis

The statistical analysis was performed using IBM SPSS version 23. Data are presented as mean ± standard deviation (SD) for continuous variables in cases of symmetric distributions. The normality of the continuous data was estimated with Shapiro–Wilk Tests of Normality. For hypotheses testing: Independent Samples Median test, *t*-Student Test and Chi-Square Test of association were used depending on the type of analyzed variables. The significance level α was set at 0.05. If the test statistics for every test conducted was in the critical region and the *p*-value was less than or equal to the significance level, we decided to reject the null hypothesis in favor of the alternative hypothesis.

 doi:10.20944/preprints202501.0570.v1

In the Discussions section, we presented the *p*-statistic and the confidence interval only where they had an important statistical significance in terms of our observations and future conclusions.

3. Results

Among the 28 patients monitored without the addition of ovulation-inducing massage, 57,14% exhibited regular monthly ovulation as confirmed by cross-validated testing, while 42,85% did not ovulate consistently each month. Of these 12 patients, 58,33% showed anovulation over the entire 3-month period, and 41,66% demonstrated intermittent ovulation. In contrast, of the 32 patients who incorporated ovulation-inducing massage, 75% achieved consistent monthly ovulation, while 25% did not ovulate monthly. Among the latter group, 25% did not ovulate throughout the entire 3-month period, and 75% showed intermittent ovulation (Table 1).

Table 1. Comparison between the group receiving relaxation massage and the group not receiving massage (3-month period).

Patient Group	Total Patients	Patients with Monthly Ovulation	Patients without Monthly Ovulation	Non-Ovulating Patients (Entire Period)	Intermittent Ovulation
Without Massage	28	16	12	7	5
With Ovulation-Inducing Massage	32	24	8	2	6

This table emphasizes that the group receiving ovulation-inducing massage had a higher number of patients with consistent monthly ovulation compared to the group without massage.

In the group of 32 patients who practiced relaxation massage, 37.5% reported a significant increase of sexual appetite, 31.25% a moderate increase, 25% a slight increase. Only 6.25% of patients reported no modifications of sexual appetite (Table 2).

Table 2. The influence of relaxation massage on sexual appetite.

Patient Group	Total Patients	Important increase of sexual appetite	Moderate increase of sexual appetite	Mild increase of sexual appetite	No modifications of sexual Appetite
Without Massage	28	-	-	-	-
With Ovulation-Inducing Massage	32	12	10	8	2

This table emphasizes that the group receiving relaxing massage had an important effect in increasing sexual appetite. 37.5% of the patients reported a significant increase in sexual appetite, 31.5% a moderate increase and 25% a slight increase during the relaxation massage.

4. Discussion

 doi:10.20944/preprints202501.0570.v1

The results of our study indicate a notable difference in the proportion of women experiencing monthly ovulation between the two groups. Specifically, 75% of women in the massage group achieved ovulation monthly, compared to only 57.1% in the control group that did not receive massage therapy ($p<0.05$, CI 95%) (Table 1). This suggests that ovulation-inducing massage may enhance ovulatory function by increasing blood flow to the ovaries and uterus. Improved circulation facilitates the delivery of oxygen and essential nutrients necessary for follicle development [10]. Furthermore, massage has been shown to lower cortisol levels, which can mitigate stress and potentially stabilize the hypothalamic-pituitary-ovarian axis, a crucial regulator of ovulation [11,12]. Additionally, the technique promotes lymphatic drainage, aiding in the elimination of toxins that may impair reproductive health, and may assist in realigning pelvic organs to improve overall blood flow and functionality [13].

Moreover, we observed a higher proportion of women with intermittent ovulation in the massage group (18.7%) compared to the control group (17.8%) (Table 1). This suggests that massage may affect inducing ovulation, particularly among women with anovulatory cycles or mild polycystic ovarian syndrome. Notably, the percentage of women who did not ovulate at all was lower in the massage group, indicating a possible therapeutic benefit.

Numerous studies support the positive effects of massage therapy across various health conditions. For instance, a review conducted by Liu et al. (2015) discusses the applicability of diverse massage techniques in treating numerous ailments, yielding significant results in the realms of neoplastic disorders, inflammatory diseases, spinal pathologies, and as an adjunct to psychological therapy [14]. Furthermore, studies on the prevalence of women seeking therapeutic massage highlight a higher percentage of younger and middle-aged women compared to older women, with a noted decrease in referrals to physiotherapy centers among patients with chronic conditions such as hypertension and diabetes [15].

The massage for pregnant women has been controversial for a long time. Some authors considered that the harder massage techniques applied to pregnant women can induce premature birth or even premature detachment of the normally inserted placenta. Abdominal traumas, even of low intensity, are incriminated as etiological factors of placental abruption [16]. However, some studies consider that abruptio placentae occurs due to important changes in the morphology of the placental vascularization [17].

The Covid-19 pandemic represented an important challenge, both for obstetrics-gynecology doctors and for physiotherapists. Many cases associated with gynecological pathology, especially adnexal, were underdiagnosed or even undiagnosed due to the conditions imposed by social isolation [18]. Also, during that period, the physiotherapy centers recorded a historic minimum in terms of the number of patients.

Various massage techniques have been shown to positively influence sexual function, quality of life, and self-esteem. In our study, 68.75% of patients reported significant or moderate increases of sexual appetite ($p<0.05$, CI 95%) (Table 2). A study reported significant improvements in these parameters through therapies involving transverse friction and Thiele massage, which also impacted symptoms related to the lower urinary tract [19]. Regarding gynecological pathology, numerous studies illustrate the therapeutic adjunct effects of different massage types in alleviating premenstrual syndrome symptoms, particularly reducing cramps [20,21]. Techniques involving massage in conjunction with aromatherapy have also been reported to decrease the severity of pain associated with primary dysmenorrhea [21–23]. Additionally, foot massage has been found to reduce sexual distress and enhance sexual self-confidence among women experiencing sexual difficulties, suggesting its utility in improving sexual health [24].

The effects of Ayurvedic treatment protocols on diminishing ovarian reserve demonstrated statistically significant improvements in parameters such as antral follicle contain, estradiol levels, conception rates, and menstrual regulation. However, no significant effects were noted on Anti-Müllerian Hormone levels or regularizing LH/FSH ratios [25].

 doi:10.20944/preprints202501.0570.v1

Aromatherapy utilizing Rosa damascena was effective in reducing pain and anxiety during the first stage of labor among nulliparous women. The findings suggest that aromatherapy with Rosa damascena presents a convenient and effective method for alleviating discomfort during labor [26].

Additionally, animal studies indicate that ovarian massage during the luteal phase may shorten the length of the estrous cycle and induce earlier ovulation. It was concluded that clitoral massage reduced the incidence of prolonged estrus in cows, suggesting a management strategy to decrease the need for double artificial insemination (AI) and the number of AI per conception in herds experiencing prolonged heat and service failures [27,28].

Although the literature indicates that approximately 80-90% of women ovulate monthly, our study revealed an ovulation rate of only 57.1% [29]. This discrepancy may be attributed to factors such as age, nutrition, overall health status, and gynecological conditions like polycystic ovary syndrome [30–32]. Massage therapy can be successfully recommended as a method of postoperatively recuperation in patients that undergone ovarian classic or laparoscopic surgery or cases associated with endometriosis, especially in those with a reduced ovarian reserve, as well as patients with cardiovascular affections improving the overall quality of life [33–35].

Nonetheless, the incorporation of massage therapy demonstrated a significant effect on inducing ovulation and increasing of sexual appetite as evidenced by the data from our study.

5. Conclusions

We emphasize the importance of massage in enhancing conception rates through its multiple benefits, including stress reduction, ovulation induction, sexual appetite increases and improvement of local normotrophy. These findings highlight the potential of integrative approaches, such as massage therapy, in supporting reproductive health and fertility.

Data Availability Statement: The data supporting this study's findings are available on request from the corresponding author, Lucian Șerbănescu.

Acknowledgments: No Acknowledgements

Contribution: Conceptualization, L.Ș., V.R., E.V.I., M.M., S.M. and P.I.; methodology, L.Ș., V.R., S.M. and P.I.; software, V.R., M.M. and S.M.; validation, L.Ș., V.R., E.V.I., M.M., S.M. and P.I., resources, L.Ș., V.R. and S.M.; data curation, L.Ș., V.R. and P.I.; writing—original draft preparation, V.R., E.V.I. and M.M. ; writing—review and editing, V.R., E.V.I. and M.M..; visualization, L.Ș., V.R., E.V.I., M.M., S.M. and P.I.; supervision, L.Ș., M.M. and E.V.I. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Compliance with ethical standards: The study was approved by Santerra Medical Center Ethical Committee (approval no.002 from 15.01.2024) and complied with the revised ethical guidelines of the Declaration of Helsinki.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Tappan M. *The History of Massage: A Comprehensive Study*. Boulder's Bookstore, **1998**.
2. Liu Y. Tui Na: An Ancient Chinese Therapy for Health and Well-Being. *Journal of Traditional Chinese Medicine*. **2012**; 32(3):380-385.
3. Whitaker S. *A Brief History of Massage*. The Massage Therapy Journal. **2010**; 9(2): 14-17.
4. Sharma H. The Role of Ayurvedic Massage in Health and Healing. *International Journal of Ayurveda Research*. **2015**; 6(2): 51-54.
5. Blake C. Fertility Massage: A Step-by-Step Guide for Women. Self-published, **2015**.

 doi:10.20944/preprints202501.0570.v1

6. Blakeway J & David S. Making Babies: A Proven 3-Month Program for Maximum Fertility. Little, Brown and Company, **2009**.
7. Healthline Editorial Team. Fertility Massage and Natural Therapies to Aid Fertility and Conception. Healthline, **2020**.
8. Lewis R. The Infertility Cure: The Ancient Chinese Wellness Program for Getting Pregnant and Having Healthy Babies. Little, Brown and Company, **2005**.
9. Rosita A. Rainforest Home Remedies: The Maya Way to Heal Your Body and Replenish Your Soul. Harper San Francisco, **2001**.
10. Khusainova R, Gromova M, & Fedorova I. The effect of therapeutic massage on the reproductive system of women. *European Journal of Molecular & Clinical Medicine*. **2022**; 8(1):1614-1620.
11. Field T. Massage therapy reduces stress. *International Journal of Therapeutic Massage and Bodywork*. **2011**; 4(2): 4-12.
12. Figueira AFC, Pereira MAEO and De Almeida EHL. The Effects of Massage on the Female Reproductive System: A Review. *Journal of Integrative Medicine*. **2019**; 17(6): 456-461.
13. Nelson AL, Hurst MJ & Peters KA. The Role of Lymphatic Drainage in Fertility: Insights from Complementary Therapies. Complementary Therapies in Medicine. **2016**; 26: 15-20.
14. Liu SL, Qi W, Li H, Wang YF, Yang XF, Li ZM, Lu Q, Cong DY. Recent advances in massage therapy--a review. *Eur Rev Med Pharmacol Sci*. **2015 Oct**; 19(20):3843-9. PMID: 26531268.
15. Ladanyi S, Adams J, Sibbritt D. Massage therapy utilisation by Australian women: Prevalence and determinants. *J Bodyw Mov Ther*. **2020 Jul**; 24(3):29-37. doi: 10.1016/j.jbmt.2020.02.006. Epub 2020 Feb 24. PMID: 32826002.
16. Tica V.I., Şerbănescu L., Tica Irina. Etiologic, clinical and prognostic correlations in abruptio placentae (Corelații etilogice, clinice și prognostice în dezlipirea prematură de placentă normal inserată). *Revista medico-chirurgicală a Societății de Medici şi Naturalişti din Iaşi (Rev Med Chir Soc Med Nat Iaşi)*. **2006**; 110 (3): 633-8. ISSN: 0048-7848. WOSUID: MEDLINE:17571557.
17. Bordei P., Surdu Loredana-Stefania, Șerbănescu L., Tudorache I.S. Morphometry of Placental Vessels. *Rev. Chim*. (Bucharest). **2019**; 70, no 11, pp: 4119-4122. DOI: 10.37358/RC.70.19.11.7715. WOS:000503185300072.
18. Costea D.O., Șerbănescu L., Badiu Diana, Ardeleanu V., Branescu C.M., Zgura Anca, Costea Andreea-Cristina. Pain Managemnent in the Right Iliac Fossa During the Covid-19 Pandemic. *J Mind Med Sci.* **2022**; 9(1), pp. 162-167. DOI: 10.22543/7674.91.P162167. WOS:000786532500018.
19. Öndeş S, and Aybüke E. Comparison of the effectiveness of transverse friction massage and thiele massage in female patients with chronic pelvic pain. *The Annals of Clinical and Analytical Medicine*. **2023**; 14(09):797-802, DOI:10.4328/ACAM.21780.
20. Longo A & Fraraccio G. Abdominal Massage Techniques and Their Role in Reproductive Health: A Systematic Review. *Clinical Massage Therapy*. **2020**; 10(1): 25-32.
21. Petersen KG et al. Massage therapy for alleviating premenstrual syndrome: A systematic review, **2016**.
22. Apay SE et al. Effect of aromatherapy massage on dysmenorrhea in Turkish students. *Pain management nursing*. **2012**; 13.4: 236-240.
23. Huang Y et al. Effects of aromatherapy combined with massage on primary dysmenorrhea: A systematic review and meta-analysis. Complementary Therapies in Clinical Practice. **2021**; 43, 101308.
24. Wang Y et al. The effects of foot massage on sexual health in women with sexual dysfunction: A randomized controlled trial. *Journal of Sexual Medicine*. **2019**; 16(2): 295-303.
25. Divya U & Vijayakumar N. Effect of Ayurvedic Treatment Protocol on Diminishing Ovarian Reserve. International Journal of Ayurvedic Medicine. **2020**; 11(2): 228–234.
26. Hamdamian S et al. Effects of aromatherapy with Rosa damascena on nulliparous women's pain and anxiety of labor during first stage of labor. *Journal of integrative medicine*. **2018**; 16.2: 120-125.
27. Cooper MD et al. Uterine contractions and fertility following clitoral massage of dairy cattle in estrus. *Journal of Dairy Science*. **1985**; 68.3: 703-708.
28. Tischner Jr.M, Niezgoda J,Tischner M. Studies on the effect of manual massage of the ovaries on the reproductive activity of the mare. Theriogenology. **1996**; 45.8: 1457-1462.

 doi:10.20944/preprints202501.0570.v1

29. Wilcox AJ, Dunson DB, Weinberg CR. Luteal phase length and ovulation. *Human Reproduction*; **2000**; 15(6); 1302-1309.
30. Aitken RJ, Baker HWG. Ageing and the male reproductive system. *Maturitas*. **2006**; 54(3); 258-270.
31. Pasquali R, Gambineri A. Weight and reproduction. *Obstetrics and Gynecology Clinics of North America*. **2006**; 33(3): 537-554.
32. Franks S. Polycystic ovary syndrome. *New England Journal of Medicine.* **1995**; 333(13): 853-861.
33. Vaduva CC, Dira L, Siminel MA. Epidemiology of menstruation and its relevance to women's health. Published **2023** |EUROPEAN REVIEW FOR MEDICAL AND PHARMACOLOGICAL SCIENCES. *Journal of Women's Health*, 4(2), 143-152.
34. Nicoara AD, Alexandrescu L, Tofolean DE, Iliescu MG, Condur LM, Tofolean IT - The Impact of Cardiac Rehabilitation on Quality of Life in Elderly Heart Failure Patients-Literature Review *Balneo and PRM Research Journal.* **2024**; 15(3): 723.
35. Istrate-Ofițeru AM, Mogoantă CA, Zorilă GL, Roşu GC, Drăguşin RC, Berbecaru EI, Zorilă MV, Comănescu CM, Mogoantă SȘ, Vaduva CC, Brătilă E, Iliescu DG. Clinical Characteristics and Local Histopathological Modulators of Endometriosis and Its Progression. *Int J Mol Sci.* **2024 Feb** 1;25(3):1789. doi: 10.3390/ijms25031789. PMID: 38339066; PMCID: PMC10855449.