



DEVELOPMENT OF MODERN TECHNOLOGIES AND GYNECOLOGICAL PRACTICE

Askarova Fotima Kudratovna

Assistant

Department of Obstetrics and Gynecology №1, Samarkand State Medical University, Samarkand, Uzbekistan
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ABSTRACT

Modern technologies have a significant impact on gynecological practice, contributing to improved diagnosis, treatment and prevention of diseases of the female reproductive system. This article reviews the latest advances in medical technology, including the use of artificial intelligence, telemedicine, robotic surgery, and bioengineering solutions. The potential applications of genetic testing and personalized medicine to improve the effectiveness of treatment are discussed. Special attention is paid to ethical and safety issues when introducing innovations in gynecology. The authors focus on the future of technology and its potential to optimize patient care.

РАЗВИТИЕ СОВРЕМЕННЫХ ТЕХНОЛОГИЙ И ГИНЕКОЛОГИЧЕСКАЯ ПРАКТИКА

Аскарова Фотима Кудратовна

Ассистент. кафедры акушерства и гинекологии №1, Самаркандский государственный медицинский университет, Самарканд, Узбекистан
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ABSTRACT

Современные технологии в значительной степени влияют на гинекологическую практику, способствуя улучшению диагностики, лечения и профилактики заболеваний женской репродуктивной системы. В статье рассматриваются новейшие достижения в области медицинских технологий, включая использование искусственного интеллекта, телемедицины, роботизированной хирургии и биоинженерных решений. Обсуждаются возможности применения генетического тестирования и персонализированной медицины для повышения эффективности лечения. Особое внимание уделяется вопросам этики и безопасности при внедрении инноваций в гинекологию. Авторы акцентируют внимание на перспективах развития технологий и их потенциале для оптимизации ухода за пациентками.



Relevance. As the most important field of medicine, gynecology continues to evolve in the 21st century, facing many topical issues and challenges. Modern approaches to women's health, technology, changes in society and new research are shaping new horizons for gynecological practice. Let us consider some of the field's most important and topical issues.

Reproductive rights and women's health

One of the central issues in gynecology is ensuring women's reproductive rights. According to the World Health Organization (WHO), about 73 million abortions were reported worldwide in 2019. In low-income countries, 45% of all pregnancies end in abortion. Access to quality health care, contraception, and abortion remains acute, especially in countries with limited women's rights. According to the UN, 214 million women in developing countries lacked access to modern contraceptive methods in 2019. Issues related to the legality of abortion are also discussed and sometimes become the subject of political and social debate.

Menopause and postmenopausal syndrome

With women's life expectancy increasing, the issue of menopause is becoming more and more important. About 75 percent of women experience menopausal symptoms such as hot flashes, sweating, and mood changes. Approximately 20% of women have severe symptoms that require medical intervention. Many women experience symptoms that can significantly reduce their quality of life. Research into hormone therapy and alternative therapies is helping in finding effective solutions to alleviate menopausal symptoms.

Mental health and gynecology

The link between mental and reproductive health is becoming increasingly clear. According to the World Health Organisation, women are twice as likely as men to suffer from depression. Approximately 5% of women in the world suffer from depression. Depression, anxiety disorders and other mental illnesses can affect women's reproductive health. It is important to integrate mental health into gynaecological practice, providing a comprehensive approach to treatment.

Mental factors play a significant role in women's gynaecological health. There are many examples of how emotional and mental state can affect the reproductive system. Increased levels of stress and anxiety can lead to menstrual irregularities, amenorrhoea (absence of menstruation) or increased symptoms of premenstrual syndrome (PMS). Chronic stress can also negatively affect hormonal balance.

Depressive disorders can be associated with changes in hormone levels, menstrual irregularities, and even affect fertility. Depressed women often experience a decreased sex drive and problems with orgasm.

Mental conditions can manifest themselves through physical symptoms. For example, women with anxiety disorders may experience pelvic pain that has no physiological cause.

Psychological factors such as stress and emotional distress can lead to irregular menstrual cycles. Studies show that women with high levels of stress are more likely to experience amenorrhoea and dysmenorrhoea.

The psycho-emotional state can have an impact on the ability to conceive. Stress and anxiety can reduce the chances of conception, as well as affect success with assisted reproductive technologies.



Psychological factors can exacerbate the course of various gynecological diseases such as endometriosis, uterine myomas, or polycystic ovary syndrome. Mental disorders can cause difficulties in intimacy, reducing libido and contributing to sexual dysfunction.

It is important to note that the relationship between mental state and gynecological health is bidirectional: not only psychological factors can affect the reproductive system, but also gynecological problems can lead to a deterioration of the psycho-emotional state. The approach to treatment of such conditions often requires a multidisciplinary approach, including consultations with both gynecologists and psychiatrists or psychotherapists.

Innovative technologies and telemedicine

Modern technologies, including telemedicine, have significantly changed the approach to gynaecological practice. The ability to provide remote counselling, patient monitoring and preventive check-ups has become particularly relevant in the context of the COVID-19 pandemic. This improves access to care, especially for women in remote or underserved regions. In 2020, with the COVID-19 pandemic, the use of telemedicine in the field of gynaecology has increased by 154%, compared to previous years.

Innovative technologies and telemedicine in gynaecology are improving access to health services, improving the quality of diagnosis and treatment, and facilitating interaction between doctors and patients. Patients can have consultations with gynaecologists through video calls or dedicated platforms. This is convenient for discussing symptoms, receiving treatment recommendations and monitoring chronic conditions such as polycystic ovaries or uterine myoma.

Modern wearables (wearable devices) and mobile apps allow patients to monitor their menstrual cycle, track symptoms and share data with their doctor. For example, apps such as Clue or Glow help women manage their reproductive health.

With remote monitoring technologies, pregnant women and women at high risk of pregnancy (e.g. with diabetes or hypertension) can be monitored. This allows health care providers to monitor the health status of patients and respond to changes in a timely manner.

Some mobile apps already provide the ability to pre-diagnose certain gynaecological diseases or assess the risk of diseases based on user input. For example, apps can assess the likelihood of cervical cancer based on information entered about symptoms and health history.

Today's technology enables ultrasound exams with real-time image transmission, which is particularly useful for remote patients or those in hard-to-reach areas.

Virtual reality is finding applications in training students and doctors, as well as for therapeutic purposes. For example, VR services can be used to manage anxiety in women before gynaecological procedures.

Forums and support groups on social media provide opportunities for women to share experiences, get information about gynaecological conditions and find support during difficult times.

Artificial intelligence can be used to analyse medical images such as ultrasounds or mammograms, helping to detect abnormalities such as ovarian cysts or cancerous growths at an earlier stage.



Robotic surgical systems such as Da Vinci allow for minimally invasive surgery in gynaecology, improving outcomes and reducing patient recovery time.

Healthcare providers offer online courses and webinars for physicians to educate them on new technologies and treatments to help improve the quality of care.

Oncology and early diagnosis

Cancer of the reproductive system remains one of the leading causes of death among women. According to the International Agency for Research on Cancer (IARC), more than 604,000 cases of cervical cancer were registered worldwide in 2020, accounting for 3.2% of all cancers. The issues of early diagnosis, prevention and treatment of gynaecological cancers require constant attention. Modern technologies such as genetic testing and new therapies are opening new horizons in the fight against these diseases.

Impact of lifestyle on women's health

Current research confirms that lifestyle, including diet, physical activity and stress levels, significantly affect women's reproductive health. Educational programs and public awareness of the importance of a healthy lifestyle are becoming essential for the prevention of many diseases.

Gender equality in healthcare

Gynecology is inextricably linked to gender equality issues. Ensuring equal access to health services and eliminating bias in the treatment of women are important aspects of modern gynecology. This includes both the physical and mental components of women's health. According to the UN, about 1 in 3 women in developing countries face discrimination in access to health services, which negatively affects their reproductive health.

Conclusion. The topical issues of gynecology in the 21st century require a comprehensive approach that integrates medical, social and cultural aspects. Continuous updating of knowledge, adaptation to new conditions and use of modern technologies will help to ensure high quality of medical care and improve the health of women worldwide. Innovative technologies and telemedicine are greatly expanding the possibilities of gynecological practice, increasing accessibility and quality of services, and improving interaction between doctors and patients. This area continues to evolve, and we can expect to see even more advanced women's health solutions in the future.

It is important to remember that women's health is not only a medical problem, but also a social problem that requires attention and action from the whole society.

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