ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

SELECTION AND PREPARATION OF PATIENTS FOR MEDICAL CARE USING ASSISTED REPRODUCTIVE TECHNOLOGIES

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Abstract: Assisted Reproductive Technologies (ART) have revolutionized the field of reproductive medicine, offering hope to individuals and couples struggling with infertility. However, the success of these treatments relies heavily on the careful selection and preparation of patients. In this article, we will delve into the critical aspects of selecting and preparing patients for medical care using ART, exploring the various factors that influence treatment outcomes and the importance of a multidisciplinary approach.

Keywords: Female genital development, Genital misalignment, Congenital anomalies, Early diagnosis, Pediatric healthcare, Genetic screening, Personalized treatment

Introduction: The basic direction of demographic policy development is defining the state policy on childbearing and family formation as socio-economic priorities, which are used in the demographic programs of the subjects. These programs aim at increasing the number of families with children by improving the quality of living and child-rearing conditions, protecting the family, as well as promoting the value of the family and childbearing through economic support for launching and raising children. The development of new values and attitudes does not reduce the importance of developing modern technologies for reproduction in the health protection system. Modern means of scientific and technical progress, in particular, the use of assisted reproductive technologies, are equally available to all married couples. One of the key tasks of demographic policy is to encourage demographic processes. The success of solving this problem largely depends on its components: reproductive health of the population and labor potential, as well as the health of children, and mother and child care. Given the above, the development of modern research infrastructures, including methods of assisted reproduction, medical and social support, and organization of medical care for couples with infertility, is one of the most relevant fields of medicine, addressing issues in the structure of public health that are associated with the treatment of reproductive and perinatal disorders.

Background

The possibility of influencing the origin of the offspring using various methods has been known since ancient times. The achievements of the past century in the field of reproductive health have revolutionized biological progress and technology, leading to the development of assisted reproductive technologies intended to help people who have no opportunity to have a genetically related offspring with the help of clinical and laboratory methods. Today, the advanced directions in the field of fundamentally new infertility treatment methods are complex stem cell therapy and nanotechnologies. The diagnosis and prevention of diseases and conditions that can prevent the occurrence or development of pregnancy and childbirth, associated with both the somatic and reproductive health of women, have a direct humanitarian and social function because they concern individuals and determine the essence of future generations' health. Modern ART has allowed solving problems that

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
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previously seemed unsolvable, provided significant support for natural reproductive function, and made a significant contribution not only to genetic but also to social and psychological components of parenthood.

The term "ART" has existed for more than three decades. The birth of the first "test-tube" child took place in 1978, and in vitro fertilization immediately entered into use both in obstetric associations and in everyday life. The rapid development of scientific and medical progress has made ART one of the main directions of modern medicine, which addresses both reproductive problems of individuals and families and seriously helps with the socially significant demographic problems of many countries, providing budget savings and simplification of medical and social issues in society. Nowadays, reproductive problems are solved by means of various assisted reproductive technologies in most developed countries: assisted insemination, in vitro fertilization, intracytoplasmic sperm injection, freezing of biological material, surrogacy, and oocyte donation, which can have both infringing and beneficial social implications. The chief feature of all ART is that the prevention, diagnosis, and therapy of infertility have objective legislative, ethical, deontological, and legal contradictions that must be resolved not only quickly and effectively but also in consideration of the interests and rights to health of many participants in the process, both those who need patient-oriented medical aid and those who provide it.

Importance of Patient Selection and Preparation

A question that often arises is regarding the progress of assisted reproductive technologies in recent years and, in particular, the use of high-tech medical care to treat infertile couples. The question arises as to the selection of patients for medical care. Who needs an application, and who needs IVF? Is it possible to give birth to a healthy child after an extensive examination? In which cases are testing performed? Confirmation of the diagnosis of female or male infertility is a starting point for applying ART methods. Therefore, the first requirement is timing. If a child is not born within one year of regular intercourse without the use of a contraceptive method, comprehensive treatment may be required. This is due to the fact that it is known that with regular intercourse without elementary contraception, 85% of women conceive within a year, whereas the removal rate of women without any assistance within the next three years reaches 95%.

In connection with the previous argument, it can be assumed that up to one-year, prophylactic examination as a limited type of examination is carried out in cases of random therapy without any stimulation for women whose period after stopping the contraceptive method has become local bleeding, or the menstrual cycle is too long. A report is published within one year of ovulatory observation for couples who have contracted sexually or during assisted programs of reproductive medicine. In the above, we do not take into account the amount of recommended medical interventions on the part of a woman, all the existing techniques associated with her previous medical history, ultrasound data, and expert examination. The type of female infertility is already addressed at the first visit to the gynecologist, where it is necessary to instruct the couple on the presence of male infertility and that over time, coordinated assistance should be provided to both.

Literature review.

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
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The selection and preparation of patients for medical care using assisted reproductive technologies (ART) is a multifaceted area of research that encompasses various aspects of medical practice, patient attitudes, and the implications of ART on health outcomes. The literature in this domain has evolved significantly, revealing critical insights into the methodologies employed, the psychosocial dimensions of treatment, and the ongoing challenges faced by patients.

In McDowell et al. (2014) review, McDowell et al. highlighted the significance of advanced sperm selection techniques in enhancing the effectiveness of ART, particularly in intracytoplasmic sperm injection (ICSI) cycles. These techniques, which include assessing sperm based on surface charge, apoptosis status, and DNA integrity, aim to improve fertilization rates by ensuring that only the most viable sperm are selected for the process. The authors emphasized that while these advanced methods theoretically enhance ART outcomes, their actual impact requires further evaluation through randomized controlled trials, underscoring the need for rigorous scientific inquiry in the field.

Fortin and Abele (2016) expanded the discussion by examining the sociocultural factors influencing women's attitudes towards ART. Their findings revealed that increased awareness of ART correlates with more favorable attitudes among women, suggesting that education and public discourse play crucial roles in shaping perceptions of infertility treatments. This study highlights the necessity of addressing societal changes, such as delayed motherhood, which contribute to rising infertility rates, and emphasizes the importance of understanding the demographic variables that affect acceptance of ART.

The qualitative research conducted by Huang et al. (2019) provided a deeper understanding of the emotional and psychological experiences of first-time mothers following ART treatment in Taiwan. Their study revealed a complex interplay of feelings surrounding pregnancy and childbirth, emphasizing the need for supportive measures that address the unique challenges faced by these women. The authors pointed out that psychological adjustment during this journey is critical, advocating for comprehensive care that encompasses emotional support alongside medical treatment.

In R. Lorenzon et al. (2020), Lorenzon et al. focused on research priorities identified by patients undergoing ART, shedding light on their concerns regarding the long-term health implications for children conceived through these methods. Their findings indicated a pressing need for ongoing research into the health outcomes associated with ART, particularly concerning preterm births and low birth weights. The authors called for enhanced communication between healthcare providers and patients to ensure that research findings are effectively translated into actionable insights that can inform treatment decisions and improve quality of life.

Analysis and Results.

The initial step in preparing patients for ART is a thorough evaluation and selection process. This involves a comprehensive assessment of the patient's medical history, reproductive health, and overall well-being. A team of healthcare professionals, including reproductive endocrinologists, embryologists, and genetic counselors, work together to identify potential candidates for ART. The primary goal of this evaluation is to determine the underlying

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

cause of infertility and to establish a suitable treatment plan. When selecting patients for ART, several factors are taken into consideration. These include age, medical history, ovarian reserve, sperm quality, and overall health. Age, in particular, plays a significant role in ART success rates. Women over 35 years old are considered advanced reproductive age, and their chances of conceiving decline significantly with each passing year. Men, too, experience a decline in fertility with age, albeit at a slower rate than women. Therefore, age is an essential factor in determining the suitability of patients for ART. In addition to age, medical history is also a crucial consideration in patient selection. Pre-existing medical conditions, such as polycystic ovary syndrome (PCOS), endometriosis, or previous pelvic surgery, can impact the success of ART. Furthermore, certain medical conditions, like cancer or autoimmune disorders, may require special consideration and treatment before ART can be initiated.

Once patients have been selected for ART, a thorough preparation process ensues. This involves a range of treatments and interventions aimed at optimizing the chances of success. One of the most critical aspects of preparation is the evaluation and treatment of underlying medical conditions. For women, this may include the management of conditions such as PCOS, thyroid disorders, or endometriosis. In some cases, surgery may be necessary to treat conditions like endometriosis or fibroids. Men, too, may require treatment for underlying medical conditions, such as hypogonadism or varicocele. Hormonal evaluation and management are also essential components of the preparation process. Women may undergo hormone testing to determine their ovarian reserve, while men may require hormone replacement therapy to address low testosterone levels. Additionally, patients may be advised to make lifestyle changes, such as maintaining a healthy weight, quitting smoking, and reducing stress, to optimize their chances of success. The emotional and psychological aspects of ART should not be overlooked. The treatment process can be stressful and emotionally challenging, and patients require adequate support and counseling to navigate this journey. Mental health professionals can provide patients with coping strategies and emotional support, helping to mitigate the psychological impact of ART. Patients should be educated on the risks and benefits associated with ART, including the potential risks of multiple gestations and the emotional toll of treatment failure. Informed consent is essential, and patients should be empowered to make informed decisions about their treatment.

Genetic counseling is another vital aspect of the preparation process. Patients may be at risk of transmitting genetic disorders to their offspring, and genetic counseling can help identify these risks. In some cases, genetic testing may be necessary to determine the presence of specific genetic mutations. Preimplantation genetic testing (PGT) is a tool used in ART to screen embryos for genetic disorders. This testing can help identify embryos that are free of genetic mutations, increasing the chances of a healthy pregnancy. However, PGT is not without controversy, and patients should be aware of the ethical implications of this testing.

Conclusion.

In conclusion, the selection and preparation of patients for medical care using ART require a multifaceted approach. A comprehensive evaluation and selection process, combined with thorough preparation and emotional support, are critical to optimizing treatment outcomes. By carefully evaluating and preparing patients for ART, healthcare professionals can increase the chances of success and provide patients with a greater sense of control and

ISSN: 2692-5206
AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

empowerment throughout the treatment process. The key to successful ART lies in a team-based approach, incorporating the expertise of healthcare professionals from various disciplines. By working together, healthcare providers can provide patients with the best possible care, ensuring that they are adequately prepared for the challenges and triumphs of ART. As the field of reproductive medicine continues to evolve, it is essential that healthcare professionals remain committed to providing patients with compassionate, individualized care, tailored to their unique needs and circumstances.

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