Received: 17 May 2025 / Accepted: 28 October 2025 / Published online: 30 December 2025

DOI 10.34689/SH.2025.27.6.021

UDC 618.177:614.2

MODERN ASPECTS OF PATIENT-CENTERED CARE IN INFERTILITY

Aigerim T. Kushtekova[1], https://orcid.org/0009-0008-0181-8206
Lyudmila S. Yermukhanova[1], https://orcid.org/0000-0001-7703-9649
Vyacheslav N. Lokshin[2], https://orcid.org/0000-0002-4792-5380
Ardak N. Nurbakyt[3], https://orcid.org/0000-0002-4854-6809
Vladislav S. Korsak[4], https://orcid.org/0000-0001-5462-0756
Zhanar A. Dostanova[1], https://orcid.org/0000-0001-8927-2958
Kerbez N. Kimatova[1], https://orcid.org/0000-0003-1547-9731

[1] West-Kazakhstan Marat Ospanov Medical University, Aktobe, Republic of Kazakhstan;
[2] International Center for Clinical Reproduction «Persona», Almaty, Republic of Kazakhstan;
[3] Asfendiyarov Kazakh National Medical University, Almaty, Republic of Kazakhstan;
[4] International Center for Reproductive Medicine, St. Petersburg, Russian Federation.

Abstract

Introduction. Infertility remains one of the pressing problems of modern medicine, affecting not only the physical health of patients but also their psycho-emotional state, social relationships, and overall quality of life. With the increasing prevalence of infertility and the widespread use of assisted reproductive technologies (ART), there is a growing need for a more humanistic and holistic approach to medical care. One of the key directions in improving treatment effectiveness is the implementation of patient-centered medicine principles. Patient-centered care implies active involvement of the patient in decision-making, respect for their values, provision of information, and ensuring comfortable treatment conditions. The application of such approaches is especially important in reproductive medicine, where every intervention touches upon deeply personal and socially sensitive aspects of patients' lives.

Aim. To conduct a review of current scientific literature devoted to the implementation of a patient-centered approach in infertility treatment.

Search strategy. The review included scientific publications addressing patient-centered approaches in infertility treatment using ART and in the organization of reproductive care. The search query included the following keywords: "patient-centered care," "infertility," "patient experience," "reproductive medicine," "ART," "shared decision-making," as well as their equivalents in Russian. The search was conducted in PubMed, Scopus, Web of Science, and Google Scholar databases for the period from 2006 to 2024.

Results. Patients' experience of patient-centered care (PCC) in infertility treatment varies across different countries. To the best of our knowledge, no studies have been conducted in Kazakhstan to investigate the perceptions of healthcare professionals and patients regarding the implementation of patient-centered care in infertility.

Conclusion. The key components of the patient-centered model are active patient involvement in decision-making, provision of accessible and reliable information, emotional support, and individualization of the treatment process.

Keywords: *infertility, patient-centered care, assisted reproductive technologies, quality of medical care, doctor-patient communication.*

For citation:

Kushtekova A.T., Yermukhanova L.S., Lokshin V.N., Nurbakyt A.N., Korsak V.S., Dostanova Zh.A., Kimatova K.N. Modern aspects of patient-centered care in infertility // *Nauka i Zdravookhranenie* [Science & Healthcare]. 2025. Vol.27 (6), pp. 193-201. *doi 10.34689/SH.2025.27.6.021*

Резюме

СОВРЕМЕННЫЕ АСПЕКТЫ ПАЦИЕНТОРИЕНТИРОВАННОЙ ПОМОЩИ ПРИ БЕСПЛОДИИ

Айгерим Т. Куштекова[1], https://orcid.org/0009-0008-0181-8206
Людмила С. Ермуханова[1], https://orcid.org/0000-0001-7703-9649
Вячеслав Н. Локшин[2], https://orcid.org/0000-0002-4792-5380
Ардак Н. Нурбакыт[3], https://orcid.org/0000-0002-4854-6809
Владислав С. Корсак[4], https://orcid.org/0000-0001-5462-0756
Жанар А. Достанова[1], https://orcid.org/0000-0001-8927-2958
Кербез Н. Киматова[1], https://orcid.org/0000-0003-1547-9731

[1] НАО «Западно-Казахстанский медицинский университет имени Марата Оспанова», г. Актобе, Республика Казахстан;
[2] Международный Центр Клинической Репрудоктологии «Persona» г. Алматы, Республика Казахстан;
[3] НАО «Казахский национальный медицинский университет имени С.Д. Асфендиярова», г. Алматы, Республика Казахстан;
[4] Международный центр репродуктивной медицины, г. Санкт-Петербург, Российская Федерация.

Введение. Бесплодие остается одной из актуальных проблем современной медицины, затрагивая не только физическое здоровье пациентов, но и их психоэмоциональное состояние, социальные отношения и качество жизни в целом. В условиях роста числа случаев бесплодия и широкого применения вспомогательных репродуктивных технологий (ВРТ) возрастает потребность в более гуманистичном, целостном подходе к оказанию медицинской помощи. Одним из ключевых направлений повышения эффективности лечения является внедрение принципов пациенториентированной медицины. Пациенториентированность подразумевает активное вовлечение пациента в процесс принятия решений, уважение к его ценностям, информированность, а также обеспечение комфортных условий лечения. Применение таких подходов особенно важно в репродуктивной медицине, где каждое вмешательство затрагивает глубоко личные и социально чувствительные аспекты жизни пациентов.

Цель. Провести обзор современной научной литературы, посвященной реализации пациенториентированного подхода в лечении бесплодия.

Стратегия поиска. Для проведения обзора использовались научные публикации, освещающие вопросы пациенториентированного подхода в лечении бесплодия с помощью ВРТ и организации репродуктивной помощи. Поисковый запрос включал ключевые слова: «patient-centered care», «infertility», «patient experience», «reproductive medicine», «ART», «shared decision-making», а также их эквиваленты на русском языке. Поиск проводился в базах данных Pubmed, Scopus, Web of Science, Google Scholarза период с 2006 по 2024 годы.

Результаты. Опыт пациентов в отношении PCC при лечении бесплодия будет различаться в разных странах. Насколько нам известно, на сегодняшний день в Казахстане не проводилось исследований, посвященных изучению восприятия медицинских работников и пациентов о проведении ориентированной на пациента помощи при бесплодии.

Выводы. Ключевыми компонентами пациенториентированной модели являются активное вовлечение пациента в процесс принятия решений, обеспечение доступной и достоверной информации, эмоциональная поддержка и индивидуализация лечебного процесса.

Ключевые слова: *бесплодие, пациенториентированный подход, вспомогательные репродуктивные технологии, качество медицинской помощи, коммуникация врач-пациент.*

Для цитирования:

Куштекова А.Т., Ермуханова Л.С., Локшин В.Н., Нурбакыт А.Н., Корсак В.С., Достанова Ж.А., Киматова К.Н. Современные аспекты пациенториентированной помощи при бесплодии // Наука и Здравоохранение. 2025. Vol.27 (6), С.193-201. *doi 10.34689/SH.2025.27.6.021*

Түйіндеме

БЕДЕУЛІКТІ ЕМДЕУДЕ ПАЦИЕНТКЕ БАҒЫТТАЛҒАН КӨМЕКТІҢ ҚАЗІРГІ АСПЕКТІЛЕРІ

Айгерим Т. Куштекова[1], https://orcid.org/0009-0008-0181-8206
Людмила С. Ермуханова[1], https://orcid.org/0000-0001-7703-9649
Вячеслав Н. Локшин[2], https://orcid.org/0000-0002-4792-5380
Ардақ Н. Нурбақыт[3], https://orcid.org/0000-0002-4854-6809
Владислав С. Корсак[4], https://orcid.org/0000-0001-5462-0756
Жанар А. Достанова[1], https://orcid.org/0000-0001-8927-2958
Кербез Н. Киматова[1], https://orcid.org/0000-0003-1547-9731

[1] «Марат Оспанов атындағы Батыс Қазақстан медицина университеті» КеАҚ, Ақтөбе қ., Қазақстан Республикасы;
[2] «Persona» Халықаралық клиникалық репродукция орталығы, Алматы қ., Қазақстан Республикасы;
[3] «С.Ж. Асфендияров атындағы Қазақ ұлттық медицина университеті» КеАҚ, Алматы қ., Қазақстан Республикасы;
[4] Халықаралық репродуктивті медицина орталығы, Санкт-Петербург қ., Ресей Федерациясы.

Кіріспе. Бедеулік қазіргі медицинаның өзекті мәселелерінің бірі болып қалып отыр. Ол тек науқастардың физикалық денсаулығына ғана емес, сонымен қатар олардың психоэмоционалдық жағдайына, әлеуметтік қатынастарына және жалпы өмір сапасына әсер етеді. Бедеулік жағдайларының артуы және көмекші репродуктивтік технологиялардың (КРТ) кеңінен қолданылуы жағдайында медициналық көмекті көрсетуде гуманистік әрі кешенді көзқарастың қажеттілігі артып келеді. Емдеудің тиімділігін арттырудың негізгі бағыттарының бірі – пациентке бағытталған медицинаның қағидаттарын енгізу. Пациентке бағытталу науқасты шешім қабылдау

процесіне белсенді қатыстыруды, оның құндылықтарына құрметпен қарауды, ақпараттандыруды және жайлы жағдай жасауды қамтиды. Мұндай тәсілдердің қолданылуы репродуктивті медицинада ерекше маңызды, өйткені әрбір араласу пациенттердің жеке және әлеуметтік тұрғыдан сезімтал қырларын қозғайды.

Мақсаты. Бедеулікті емдеуде пациентке бағытталған тәсілді іске асыруға арналған қазіргі ғылыми әдебиеттерге шолу жүргізу.

Іздеу стратегиясы. Шолуды жүргізу үшін КРТ көмегімен бедеулікті емдеуде және репродуктивті көмекті ұйымдастыруда пациентке бағытталған тәсілге қатысты ғылыми жарияланымдар пайдаланылды. Іздеу сұрағына келесі кілт сөздер енгізілді: «patient-centered care», «infertility», «patient experience», «reproductive medicine», «ART», «shared decision-making» және олардың орыс тіліндегі баламалары. Іздеу Pubmed, Scopus, Web of Science, Google Scholar дерекқорларында 2006–2024 жылдар аралығында жүргізілді.

Нәтижелер. Пациенттердің бедеулікті емдеуде пациентке бағытталған көмекті қабылдау тәжірибесі әр елде әртүрлі болады. Біздің білуімізше, бүгінгі күнге дейін Қазақстанда бедеулікті емдеуде пациентке бағытталған көмекті жүзеге асыруға қатысты медицина қызметкерлері мен пациенттердің қабылдауын зерттеуге арналған жұмыстар жүргізілмеген.

Қорытынды. Пациентке бағытталған модельдің негізгі құрамдас бөліктері: науқасты шешім қабылдау процесіне белсенді тарту, қолжетімді әрі сенімді ақпаратпен қамтамасыз ету, эмоционалдық қолдау көрсету және емдеу процесін жекелендіру болып табылады.

Түйінді сөздер: *бедеулік, пациентке бағытталған тәсіл, көмекші репродуктивтік технологиялар, медициналық көмектің сапасы, дәрігер-пациент коммуникациясы.*

Дәйексөз үшін:

Куштекова А.Т., Ермуханова Л.С., Локшин В.Н., Нурбакыт А.Н., Корсак В.С., Достанова Ж.А., Киматова К.Н. Бедеулікті емдеуде пациентке бағытталған көмектің қазіргі аспектілері. Әдебиеттік шолу // Ғылым және Денсаулық сақтау. 2025. Vol.27 (6), Б. 193-201. *doi 10.34689/SH.2025.27.6.021*

Introduction

Infertility remains a pressing issue affecting many individuals. Modern medicine offers various methods for diagnosing and treating this condition; however, the influence of factors such as stress, lifestyle, and age highlights the importance and relevance of assisted reproductive technologies (ART). These technologies provide the possibility of biological parenthood for those facing infertility, a low probability of conception, or other medical challenges.

The prevalence of infertility in the Republic of Kazakhstan, according to various literature sources, ranges from 12% to 15.5%. In Kazakhstan, 23 infertility treatment centers provide ART services. ART clinics operate in major cities of the country, but the majority of them are located in Nur-Sultan (the capital) and Almaty, where the population exceeds 1 million people. The increase in the number of cycles is driven by the availability of information, the growth of household income, the development of private IVF clinics, and possibly the expansion of state subsidies for IVF [32].

The prevalence rates of infertility have been studied in several investigations: registered rates are 12% in the USA, 9% in the United Kingdom, and 12% in Portugal. Infertility is a serious health problem that can be treated; however, as some authors reporte, only 56% of infertile couples seek medical help [29].

The prevalence of infertility in the Republic of Kazakhstan, according to various literature sources, ranges from 12% to 15.5%. In Kazakhstan, 23 infertility treatment centers provide ART services. ART clinics operate in major cities of the country, but the majority of them are located in Nur-Sultan (the capital) and Almaty, where the population exceeds 1 million people. The increase in the number of cycles is driven by the availability of information, the growth of household income, the development of private IVF clinics, and possibly the expansion of state subsidies for IVF [32].

From the government's perspective, the average healthcare expenditures required to achieve one additional birth ranged from 2,599 USD in Ukraine to 5,509 USD in Belarus. The financial costs of having a child through IVF were as follows: Ukraine – 9,839 USD, Belarus – 21,702 USD, and Kazakhstan – 2,295 USD [35].

Infertility is classified by the World Health Organization as a disease, and this definition is supported by numerous professional associations, including the American Medical Association, the European Society of Human Reproduction and Embryology, the International Committee for Monitoring Assisted Reproductive Technologies (ICMART), and the American Society for Reproductive Medicine [35, 50, 15]. Infertility is a disease historically defined as the inability to achieve a successful pregnancy after 12 or more months of regular unprotected sexual intercourse or due to an individual's impairment in the capacity to reproduce, either alone or with a partner.

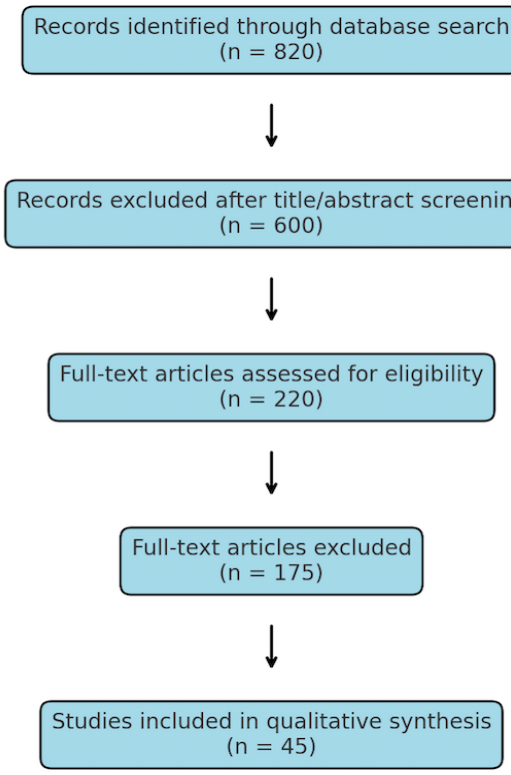
Infertility is a disease that leads to disability in the form of impaired function. Diagnostic testing for infertility should begin without delay in any patient with a medical, sexual, or reproductive history, advanced age, or physical findings suggesting a possible reproductive impairment. In the absence of relevant history or physical findings, evaluation and treatment may be initiated after 12 months in women under the age of 35, and after 6 months in women aged 35 years and older. Women over 40 years may require more immediate evaluation and treatment [1,53,2]. As of February 13, 2020, the American Medical Association (AMA) supports healthcare experts worldwide in recognizing infertility as a disease [1].

Infertility, defined as the inability to achieve pregnancy within 12 months after unprotected intercourse or therapeutic donor insemination in women under 35 years of age, or within 6 months in women over 35, affects up to 15% of couples. Diagnostic testing should begin without delay in the presence of risk factors such as age, medical, or reproductive history. Women over 40 years are recommended to undergo immediate evaluation and initiation of treatment.

Among the factors influencing reproductive function are stress, lifestyle, age, environmental conditions, and the presence of comorbidities. This emphasizes the need for a comprehensive approach to infertility treatment, in which the patient-centered model of care is becoming increasingly important. Such an approach implies respect for the individuality of the patient, consideration of their values, preferences, emotional state, and active involvement in medical decision-making.

Aim. To conduct a comprehensive review of current scientific literature on the application of a patient-centered approach in infertility treatment, with a particular focus on clinical, psychological, and organizational factors that shape the quality of care, enhance patient engagement, and influence overall satisfaction with treatment outcomes.

Search strategy. Scientific publications addressing patient-centered care in the treatment of infertility using ART and in the organization of reproductive care were used for the review. The search query included the following keywords: “patient-centered care,” “infertility,” “patient experience,” “reproductive medicine,” “ART,” “shared decision-making,” as well as their Russian equivalents. The search was conducted in PubMed, Scopus, Web of Science, and Google Scholar for the period from 2010 to 2024. Refer to Picture 1.



Picture 1. Flowchart of study selection.

Both original studies and literature reviews were included if they contained analyses of the implementation of patient-centered practices, assessments of patient satisfaction, and the quality of communication and engagement in decision-making.

Inclusion criteria: publications containing data on the principles and implementation of patient-centered care in infertility; articles describing patients’ opinions, needs, and expectations; studies concerning physician–patient interaction within assisted reproductive technologies.

Exclusion criteria: works dealing only with the clinical effectiveness of infertility treatments without analysis of organizational and communication aspects.

Data analysis was performed using a qualitative approach with synthesis and systematization of key themes identified in the literature. Considering the predefined inclusion and exclusion criteria, all records retrieved from the databases were systematically screened and assessed for eligibility. After the full-text revision and exclusion of non-relevant publications, a total of 45 studies were finally included in the review.

Results

An infertility evaluation may be offered to any patient who, by definition, is infertile or at high risk of infertility. Women over the age of 35 are recommended to undergo expedited assessment and treatment after six months of unsuccessful attempts to conceive, or earlier if clinical indications exist, while women over 40 years often require immediate evaluation. Male factors account for approximately 40–50% of infertility cases, and unexplained infertility is diagnosed in about 30% of couples. In Kazakhstan, studies revealed that participants often lacked awareness of the impact of age on fertility decline, with more than half of women reporting being “shocked” to learn about their reduced chances of conception at older ages, although this alone does not fully explain the persistent socio-demographic trend toward delayed childbearing [13]. When analyzing infertility prevalence, 12.5% of women and 10.1% of men aged 16–74 years reported at least one unsuccessful attempt to conceive lasting one year or longer [15].

Psychological factors play a critical role in infertility outcomes. Women with fertility problems undergoing assisted reproductive technology (ART) procedures demonstrated high levels of stress, anxiety, and depression, all of which negatively influenced reproductive status [40]. A cross-sectional study of 89 infertile women using the FertiQoL and Hospital Anxiety and Depression scales revealed a mean overall FertiQoL score of 66.0 ± 14.5. Lower quality-of-life scores were associated with longer duration of infertility and higher numbers of IVF cycles, and a negative correlation was observed between treatment tolerability and indicators of anxiety and depression [29]. In a prospective cohort study of 304 infertile women in three Kazakhstani cities, more than 80% had CES-D scores above 16, suggesting a risk of clinical depression. Anxiety and stress levels were significantly higher among non-pregnant compared with pregnant women, and anxiety in particular was negatively associated with clinical pregnancy following IVF. Regional differences were also evident: in Aktobe, 91% of women were at risk of clinical depression,

and respondents reported significantly higher stress and anxiety compared with those from Nur-Sultan [5,8].

Socio-demographic and health-related variables were strongly linked with infertility. Prevalence was lowest among younger participants and highest in women aged 35–44 years (17.7%), while for men it extended from 35 to 54 years. Infertility was more frequent among married or cohabiting individuals, and in women it was positively associated with older age at first cohabitation. Treatment for depression in the previous year showed a borderline association with infertility in women, while in men infertility was associated with prior sexually transmitted infections, particularly chlamydia (AOR 1.39, 95% CI 1.02–1.88). Data from the United Kingdom further indicated that one in eight women and one in ten men reported infertility, with higher prevalence among individuals of higher education and social status, as well as those who had children later in life. Women under 50 years with infertility were more likely to report depression symptoms and dissatisfaction with their sexual life (AOR 1.81, 95% CI 1.15–2.84) [15]. In patients with natural infertility and chronic salpingitis, endocrine disorders such as thyroid dysfunction were among the most frequently detected comorbidities (15.38%) [6].

Quality-of-life assessment tools have provided deeper insight into the psychosocial burden of infertility. The FertiQoL questionnaire has become a gold standard, demonstrating good internal consistency across domains (Cronbach's $\alpha \approx 0.8$). A Kazakhstani cross-sectional study of 453 women undergoing IVF showed that respondents with secondary infertility reported significantly higher emotional, social, environmental, and treatment domain scores compared with those with primary infertility. However, women with low income had the lowest overall FertiQoL scores, and prolonged infertility duration was associated with worse outcomes. The mean overall FertiQoL score among Kazakhstani women was 59.6 ± 11.5, which is considerably lower than in European countries [17,27].

Infertility was consistently described as a stressful life event with wide-ranging social and personal consequences [12,45]. Although ART has offered hope to many couples, access remains limited due to financial and insurance barriers, while medicalization of infertility has often overlooked patients' emotional responses, including distress, loss of control, stigmatization, and disruption of life trajectories. Patient-centered care (PCC) is therefore increasingly recognized as an essential element of infertility services, emphasizing respect for patients' preferences, needs, and values [15,52]. Despite its benefits, implementation faces barriers including insufficient professional training, underestimation of patient needs, lack of time and resources, and rigid organizational cultures [33,14].

Patient-centered infertility care is structured around both systemic and human dimensions. Systemic priorities include provision of information, competence of staff, coordination and continuity of care, accessibility, and physical comfort, while human factors encompass communication, patient involvement, confidentiality, and emotional support. Evidence indicates that attention to these factors improves satisfaction, adherence to treatment, and quality of life [28, 51,39]. However, significant gaps remain between patients' expectations and providers' perceptions. Providers often underestimate patients' needs for information and emotional support, as demonstrated in a Dutch study of 1189 infertile couples and 194 healthcare professionals. Specialists consistently underestimated communication, patient involvement, and competence, while overestimating continuity of care, misjudging 29 aspects of treatment quality overall [4,21].

Systematic reviews further suggest that while evidence linking PCC directly to improved clinical outcomes remains mixed, its benefits for patient satisfaction, empowerment, and self-management are consistently strong [44,38]. PCC has been identified as one of the six determinants of healthcare quality by the Institute of Medicine, and its key elements - information, communication, physical and emotional support, family involvement, continuity of care, and access - are particularly important for patients undergoing prolonged and emotionally demanding infertility treatment [10, 28,51]. In Israel, PCC has been formally introduced as a quality metric by the Ministry of Health. In Kazakhstan, the Healthcare Development Concept 2026 prioritizes the integration of PCC into reproductive services, with emphasis on patient support programs, digital health solutions, and provider training. Furthermore, contracting policy reforms aim to strengthen accountability and prioritize patient-centered services within the State Guaranteed Benefits Package and the Mandatory Social Health Insurance [42].

Finally, studies highlight variability in perceptions of PCC between patients and providers. While overall agreement exists regarding its importance, discrepancies persist in prioritization: patients place more weight on information and communication, whereas providers emphasize coordination and integration. Some studies suggest providers underestimate their own effectiveness, while others highlight the opposite [30,9,23,13,16]. To date, no published research in Kazakhstan has directly examined how healthcare professionals and patients perceive PCC in infertility care, underlining the need for further investigations in this field.

Discussion

Moving from Biomedical to Patient-Centered Models

The findings of this review demonstrate that infertility, traditionally defined in biomedical terms as the inability to conceive after one year of unprotected intercourse, is increasingly being understood as a multidimensional condition that encompasses clinical, psychological, social, and cultural dimensions. Our results show that infertility affects both men and women, with male factors accounting for 40–50% of cases and unexplained infertility diagnosed in nearly one-third of couples. These data are consistent with global epidemiological studies, which confirm that infertility is not exclusively a female condition but a shared reproductive health challenge requiring joint approaches to care [26,36].

Despite this well-established biomedical knowledge, many patients remain unaware of risk factors, particularly age-related fertility decline. Our review of studies conducted in Kazakhstan revealed that more than half of women were "shocked" to learn that their chances of conception decreased substantially with age. This lack of awareness aligns with international reports showing that fertility literacy

remains limited even in high-income countries [31]. Such findings underscore the importance of patient-centered care (PCC), in which accessible information and patient education are prioritized alongside biomedical interventions.

Infertility Prevalence and Socio-Demographic Determinants

The prevalence of infertility observed in our review - 12.5% among women and 10.1% among men aged 16–74 - corresponds closely with international estimates, where approximately one in eight women and one in ten men experience infertility [15]. Age remains the strongest predictor: infertility peaks among women aged 35–44 and men aged 35–54. Marital and cohabitation status also show significant associations, with infertility more frequently reported among married or cohabiting individuals.

Notably, in men, infertility has been linked to a history of sexually transmitted infections (particularly chlamydia), while in women, prior depression treatment showed borderline associations. These findings emphasize the interplay between biological, psychological, and behavioral health determinants. They also highlight the need for multidisciplinary infertility care that integrates gynecological, urological, and mental health expertise.

Psychological Distress and Mental Health Correlates

A striking result of this review is the very high prevalence of psychological distress among infertile women in Kazakhstan. More than 80% of respondents in one prospective cohort study had CES-D scores above 16, indicating risk for clinical depression, while in the city of Aktobe as many as 91% of women were at risk. Stress and anxiety scores were significantly higher among non-pregnant women compared to those who conceived, and logistic regression analyses confirmed negative associations between anxiety levels and clinical pregnancy outcomes.

These findings reinforce the global evidence that infertility is a profound psychological stressor. International studies consistently demonstrate elevated rates of depression and anxiety in infertile populations, often exceeding those observed in patients with other chronic illnesses such as cancer or cardiovascular disease. Psychological distress is not merely an outcome of infertility but may itself reduce the likelihood of treatment success, creating a vicious cycle [37].

The review also demonstrates that quality of life is substantially reduced in infertile women. Mean FertiQoL scores among Kazakhstani women were 59.6 ± 11.5, significantly lower than European benchmarks, with longer infertility duration and repeated ART cycles further lowering scores. These results mirror international findings: Boivin et al. reported global FertiQoL averages around 66–70, suggesting that women in Kazakhstan face disproportionate psychosocial burdens [11]. Such disparities may be influenced by cultural expectations regarding motherhood and limited availability of psychosocial support services.

Quality of Life, Adherence, and Patient-Reported Outcomes

The FertiQoL data underscore that infertility treatment outcomes cannot be judged solely by clinical pregnancy rates. Women with lower quality of life scores were more likely to drop out of treatment, reported higher emotional distress, and demonstrated poorer adherence to medical recommendations. International research has confirmed that patient-reported outcomes (PROs), including well-being, satisfaction, and psychological state, are strong predictors of both adherence and treatment continuation [20].

The importance of integrating PROs into infertility care is therefore twofold. First, it ensures that the full impact of infertility is measured, not only its biological manifestations. Second, it provides clinicians with actionable insights into patients' needs, enabling individualized and empathetic responses. In Kazakhstan, where ART cycles are rapidly increasing, incorporating FertiQoL and CES-D tools into routine practice could serve as a critical step in patient-centered quality monitoring.

Communication, Information, and Shared Decision-Making

One of the most consistent themes emerging from both the reviewed literature and our results is the central role of effective communication. Many patients in Kazakhstan and abroad lacked clear understanding of age-related fertility decline or the psychosocial risks of infertility, indicating insufficient counseling. Studies in Europe and North America confirm that patients often perceive information provision as inadequate, while providers may underestimate the importance of communication [14,18].

Shared decision-making has been shown to enhance patient satisfaction and treatment adherence. Patients involved in selecting their treatment options report feeling more respected, empowered, and optimistic about outcomes. Conversely, when communication is overly paternalistic, patients may feel alienated and distrustful of medical services (69). In our context, the fact that so many women were unaware of fundamental fertility risks illustrates the urgent need for culturally sensitive, accessible educational strategies.

Gender and Cultural Considerations

The results also illustrate the importance of cultural and gender dimensions in patient-centered infertility care. Women and men experience and express infertility differently: women tend to report higher levels of distress, fear of failure, and feelings of social stigma, while men often underreport psychological burden due to cultural norms surrounding masculinity [34]. These patterns were observed in Kazakhstan as well, where gendered expectations strongly shape reproductive experiences.

Cross-cultural studies further demonstrate that infertility is perceived not merely as a medical condition but as a deeply social phenomenon. In some societies, infertility is associated with stigma, moral judgment, or even marital instability, making psychosocial support a critical component of treatment [25]. Therefore, PCC must be tailored to the cultural context, ensuring that communication, counseling, and support services resonate with patients' lived realities.

Organizational and Systemic Barriers

Despite clear benefits, multiple barriers impede the implementation of PCC in infertility care. Our review found that outdated organizational models, limited institutional resources, and insufficient staff training often reduce care to a formalized process with limited personalization. These obstacles are consistent with international reports, which highlight that hierarchical provider-patient relationships,

time constraints, and financial pressures hinder the uptake of PCC principles [47].

Nevertheless, innovative approaches are emerging. Digitalization of care - through telemedicine consultations, mobile health applications, and electronic diaries - offers new ways to engage patients, particularly in geographically remote or resource-limited settings. In Kazakhstan, where ART services are expanding beyond major cities, such digital platforms may prove instrumental in ensuring equitable access to information and continuity of care.

Implications for Kazakhstan and Global Context

The findings of this review hold specific implications for Kazakhstan. The expansion of ART services, combined with government support through the Healthcare Development Concept until 2026, creates an enabling environment for PCC implementation. Policy priorities now include patient satisfaction monitoring, effective communication, and the integration of health information technologies into care delivery.

Internationally, similar policy frameworks have accelerated the institutionalization of PCC. In Israel, patient-centeredness is formally monitored as a quality indicator in infertility clinics, while in the United Kingdom, the Human Fertilisation and Embryology Authority incorporates patient feedback into clinic ratings [48,24]. Kazakhstan has the opportunity to draw on these international experiences while adapting PCC principles to its unique cultural and health system context.

Future Directions

The integration of PCC in infertility care requires systemic transformation. Training programs for healthcare providers must prioritize communication skills, empathy, and shared decision-making, alongside technical expertise. Multidisciplinary teams should include not only gynecologists and urologists but also psychologists, social workers, and patient navigators. Furthermore, patient feedback systems must be institutionalized to provide continuous quality improvement. Future research should examine the cost-effectiveness of PCC interventions, as well as their impact on long-term adherence, dropout rates, and overall efficiency of ART programs. Comparative cross-cultural studies will also be essential to identify scalable models of PCC that respect cultural diversity while maintaining evidence-based standards.

Conclusions

The patient-centered approach in infertility treatment represents an important direction in the development of reproductive medicine, aimed at improving the quality and effectiveness of medical care. The results of the review showed that the key components of such a model are the active involvement of the patient in the decision-making process, the provision of accessible and reliable information, emotional support, and the individualization of the treatment process.

The implementation of patient-centered principles contributes not only to increased patient satisfaction but also to improved adherence to treatment, reduced psychological burden, and enhanced overall quality of life. At the same time, in some cases, unresolved issues remain regarding the training of medical personnel, organizational conditions, and interdisciplinary interaction.

Further work is needed on the development of standards, training programs, and assessment tools that would allow the integration of patient-centered practices into everyday clinical activities. Greater attention to the needs and expectations of patients should become an integral part of the strategy for improving the accessibility and quality of infertility care.

Authors' Contributions. *Research design and conceptual framework: Kushtekova A.T., Yermukhanova L.S.; data analysis and interpretation: Yermukhanova L.S., Lokshin V.N.; data collection and processing: Nurbakyt A.N., Korsak V.S.; reviewing and editing: Kushtekova A.T., Dostanova Zh.A., Kimatova K.N.*

Conflicts of Interest *– none declared. This article has not been previously submitted to any other publications and is not under review elsewhere. No external or pharmaceutical funding was provided for this study.*

Funding *– not applicable.*

Literature:

1. Всемирная организация здравоохранения. Определения и классификация бесплодия [Электронный ресурс]. URL: [http://www.who.int/reproductivehealth/topics/infertility/definitions/en/] (дата обращения: 16.11.2018).

2. Европейское общество репродукции человека и эмбриологии. ЭШРЕ: Аудит политики в области рождаемости: анализ 9 стран ЕС (март 2017 г.) [Электронный ресурс]. URL: https://www.eshre.eu/Press-Room/Resources

3. Об утверждении Концепции развития здравоохранения Республики Казахстан до 2026 года: Постановление Правительства Республики Казахстан от 24 ноября 2022 года № 945 [Электронный ресурс]. URL: https://adilet.zan.kz/rus/docs/P2200000945.

4. Aarts J., Faber M.J., Van Empel I., Scheenjes E., Nelen W., Kremer J. Professionals' perceptions of their patients' experiences with fertility care. Hum. Reprod. 2011. Vol. 26. P. 1119–1127.

5. Aimagambetova G., Issanov A., Terzic S., Bapayeva G., Ukybassova T., Baikoshkarova S., Aldiyarova A., Shauyen F., Terzic M. The effect of psychological distress on IVF outcomes: Reality or speculations? PLoS ONE. 2020. Vol. 15. e0242024.

6. Aketayeva A., Khamidullina Z., Akhmetova Z. Diagnosis and treatment of female infertility is one of the major problems in modern gynecology. Iran J. Public Health. 2018. Vol. 47(1). P. 135–137.

7. American Medical Association. AMA backs global health experts calling infertility a disease [Электронный ресурс]. 2018. URL: https://wire.ama-assn.org/ama-news/ama-backs-global-health-experts-calling-infertility-disease.

8. Bapayeva G., Aimagambetova G., Issanov A., Terzic S., Ukybassova T., Aldiyarova A., Utepova G., Daribay Z., Bekbossinova G., Balykov A. The effect of stress, anxiety and depression on IVF outcome in Kazakhstan. J. Clin. Med. 2021. Vol. 10. P. 937.

9. Berghout M., Exel J., Leensvaart L., Cramm J. Healthcare professionals' views on patient-centered care in hospitals. BMC Health Serv. Res. 2015. Vol. 15. P. 385.

10.Bertakis K.D., Azari R. Patient-centered care is associated with decreased health care utilization. J. Am. Board Fam. Med. 2011. Vol. 24. P. 229–239.

11. Boivin J., Takefman J., Braverman A. Development and validation of the Fertility Quality of Life (FertiQoL) tool. Hum. Reprod. 2011. Vol. 26(8). P. 2084–2091.

12. Cousineau T.M., Domar A.D. Psychological impact of infertility. Best Pract. Res. Clin. Obstet. Gynaecol. 2006. Vol. 21. P. 293–308.

13. Dancet E.A., Nelen W.L., Sermeus W., Leeuw D., Kremer J., D'Hooghe T. The patients' perspective on fertility care: a systematic review. Hum. Reprod. Update. 2010. Vol. 16. P. 467–487.

14. *Dancet E.A.F., Van Empel I.W.H., Rober P., et al.* Patient-centred infertility care: a qualitative study to listen to the patient's voice. Hum. Reprod. 2011. Vol. 26. P. 827–833.

15. Datta J., Palmer M.J., Tanton C., Gibson L.J., Jones K.G., Macdowall W., Glasier A., Sonnenberg P., Field N., Mercer C.H. Prevalence of infertility and help seeking among 15,000 women and men. Hum. Reprod. 2016. Vol. 31. P. 2108–2118.

16. Den Breejen E.M.E., Nelen W., Schol S., Kremer J., Hermens R. Development of guideline-based indicators for patient-centredness in fertility care: what patients add. Hum. Reprod. 2013. Vol. 28. P. 987–996.

17. Donarelli Z., Lo Coco G., Gullo S., Salerno L., Marino A., Sammartano F., Allegra A. The FertiQoL relational subscale: psychometric properties and discriminant validity across gender. Hum. Reprod. 2016. Номер? Стр?

18. Elwyn G., Frosch D., Thomson R., Joseph-Williams N., Lloyd A., Kinnersley P., et al. Shared decision making in clinical practice. J. Gen. Intern. Med. 2012. Vol. 27(10). P. 1361–1367.

19. Epstein R.M., Franks P., Shields C.G., Meldrum S.C., Miller K.N., Campbell T.L. Patient-centered communication and diagnostic testing. Ann. Fam. Med. 2005. Vol. 3. P. 415–421.

20. Gameiro S., Boivin J., Domar A., Hammarberg K., Harte J., Lawson A. Patient-reported outcomes in infertility: a review. Hum. Reprod. Update. 2014. Vol. 20(5). P. 629–646.

21. Gooldin S. Emotional rights, moral reasoning, and Jewish–Arab alliances in the regulation of IVF in Israel // Soc. Sci. Med. 2013. Vol. 83. P. 90–98.

22. Groene O. Patient centredness and quality improvement efforts in hospitals. Int. J. Qual. Health Care. 2011. Vol. 23. P. 531–537.

23. Holter H., Gejervall A., Borg K., Sandin-Bojö A., Wikland M., Wilde-Larsson B. In vitro fertilization healthcare professionals generally underestimate patients' satisfaction with quality of care // Acta Obstet. Gynecol. Scand. 2017. Vol. 96. P. 302–312.

24. Human Fertilisation and Embryology Authority (HFEA). Clinic rating and patient experience surveys. United Kingdom, 2021.

25. Inhorn M.C. Global infertility and the globalization of new reproductive technologies. Soc. Sci. Med. 2003. Vol. 56(9). P. 1837–1851.

26. Inhorn M.C., Patrizio P. Infertility around the globe: new thinking on gender, reproductive technologies and global movements. Hum. Reprod. Update. 2015. Vol. 21(4). P. 411–426.

27. Issanov A., Aimagambetova G., Terzic S., Bapayeva G., Ukybassova T., Baikoshkarova S., et al. Impact of governmental support to the IVF clinical pregnancy rates in Kazakhstan. BMJ Open. 2022. Vol. 12. e049388.

28. Jafarzadeh-Kenarsari F., Ghahiri A., Zargham-Boroujeni A., et al. Patient-centered fertility care: from theory to practice. JMRH. 2016. Vol. 4. P. 712–719.

29. Kahyaoglu Sut H., Balkanli K.P. Quality of life in women with infertility via the FertiQoL and the hospital anxiety and depression scales. Nurs. Health Sci. 2015. Vol. 17. P. 84–89.

30. Klitzman R. Impediments to communication and relationships between infertility care providers and patients. BMC Womens Health. 2018. Vol. 18. P. 84.

31. Lampic C., Svanberg A.S., Karlström P., Tydén T. Fertility awareness and intentions concerning childbearing. Hum. Reprod. 2006. Vol. 21(3). P. 558–564.

32. Lokshin V., Omar M., Karibaeva S. Assisted Reproductive Technologies in Kazakhstan: A 6-Year Trend Analysis. J. Reprod. Infertil. 2022. Vol. 23. P. 61–66.

33.Luis Turabian J., Turabian J.L. Patient-centered care and biopsychosocial model. Trends Gen. Pract. 2018. Vol. 1. P. 1–2.

34. Malik S.H., Coulson N.S. The male experience of infertility. J. Reprod. Infant Psychol. 2008. Vol. 26(1). P. 18–30.

35. Mandrik O., Knies S., Severens J.L. Economic value of IVF in Ukraine, Belarus, and Kazakhstan. Clinicoecon. Outcomes Res. 2015. Vol. 7. P. 347–356.

36. Mascarenhas M.N., Flaxman S.R., Boerma T., Vanderpoel S., Stevens G.A. National, regional, and global trends in infertility: a systematic analysis of 277 health surveys. PLoS Med. 2012. Vol. 9(12). e1001356.

37. Matthiesen S.M., Frederiksen Y., Ingerslev H.J., Zachariae R. Stress, distress and outcome of ART. Reprod. Biomed. Online. 2011. Vol. 23(4). P. 568–576.

38.McMillan S.S., Kendall E., Sav A., King M.A., Whitty J.A., Kelly F. Patient-centered approaches to health care: a systematic review. Med. Care Res. Rev. 2013. Vol. 70. P. 567–596.

39. Medina-Artom T.R., Adashi E.Y. Patient-centered care in Israeli IVF units: divergent perceptions of patients and providers. Isr. J. Health Policy Res. 2020. Vol. 9(1). P. 39.

40. Micic J., Aimagambetova G., Terzic S., Bapayeva G., Kongrtay K., Laganà A.S., Terzic M. Psychological factors and infertility. Advances in Health and Disease. 2021. Vol. 38. P. 67–95.

41. Ministry of Health (Israel). Pillars of Fire. Jerusalem, 2017. Номер? Стр?

42. Mira J.J., Guilabert M., Pérez-Jover V., Lorenzo S. Barriers for an effective communication around clinical decision making. Health Expect. 2014. Vol. 17. P. 826–839.

43. Practice Committee of the American Society for Reproductive Medicine. Definitions of infertility and recurrent pregnancy loss: a committee opinion. Fertil. Steril. 2020. Vol. 113(3). P. 533–535.

44. Rathert C., Wyrwich M.D., Boren S.A. Patient-centered care and outcomes. Med. Care Res. Rev. 2013. Vol. 70. P. 351–379.

45. Rowe H., Fisher J., Hammarberg K. A couple who considers ART: psychosocially informed care. In: Bio-Psycho-Social Obstetrics and Gynecology. Springer, 2017.

46. Scholl I., Zill J.M., Härter M., Dirmaier J. An integrative model of patient-centeredness – A systematic review and concept analysis. PLoS One. 2014. Vol. 9. e107828.

47. Schmidt L., Holstein B.E., Christensen U., Boivin J. Barriers to patient-centred care in fertility treatment. Hum. Reprod. 2003. Vol. 18(3). P. 628–635.

48. Shalev V., Geva R., Kleiman R., et al. Patient-centred care in Israeli infertility clinics. Isr. Med. Assoc. J. 2014. Vol. 16(5). P. 277–283.

49. Utepova G., Terzic M., Bapayeva G., Terzic S. Investigation of understanding the influence of age on fertility in Kazakhstan. Clin. Exp. Obstet. Gynecol. 2019. Vol. 46(3). P. 461–465.

50. Vander Borght M., Wyns C. Fertility and infertility: Definition and epidemiology. Clin. Biochem. 2018. Vol. 62. P. 2–10.

51. Webair H.H., Ismail T.A.T., Ismail S.B., Mohd Noor N. Patient-centred infertility care: a scoping review protocol. BMJ Open. 2019. Vol. 9(11). e032266.

52. Webair H.H., Ismail T.A.T., Ismail S.B., Khaffaji A.J., Hussain N.H.N., Kadir A.A., Muhamad R., Bakar F.A.A., Ismail N.R., Badri N. Patient-centered infertility questionnaire for female clients (PCIQ-F): part I: questionnaire development. BMC Med. Res. Methodol. 2021. Vol. 21(1). P. 188.

53. Zegers-Hochschild F., Adamson G.D., Dyer S., Racowsky C., de Mouzon J., Sokol R. et al. The International Glossary on Infertility and Fertility Care, 2017. Fertil. Steril. 2017. Vol. 108. P. 393–406.

References:

1. *Vsemirnaya organizatsiya zdravookhraneniya. Opredeleniya i klassifikatsiya besplodiya* [World Health Organization. Definitions and classification of infertility] [Elektronnyi resurs]. URL: [http://www.who.int/reproductivehealth/topics/infertility/definitions/en/]. [inRussian]

2. *Evropeiskoe obshhestvo reproduktsii cheloveka i embriologii [* European Society of Human Reproduction and Embryology]. [JeShRE: Audit politiki v oblasti rozhdaemosti: analiz 9 stran ES (mart 2017 g.)] [Jelektronnyj resurs]. URL: https://www.eshre.eu/Press-Room/Resources. [inRussian]

3. *Ob utverzhdenii Konceptsii razvitiya zdravookhranenija Respubliki Kazahkstan do 2026 goda: Postanovlenie Pravitel'stva Respubliki Kazahstan ot 24 nojabryja 2022 goda № 945* [for the Development of Healthcare of the Republic of Kazakhstan until 2026: Resolution of the Government of the Republic of Kazakhstan [for the Development of Healthcare of the Republic of Kazakhstan until 2026: Resolution of the Government of the Republic of Kazakhstan]. URL: [https://adilet.zan.kz/rus/docs/P2200000945] [in Russian].

Corresponding authors:
Aigerim Talgatovna Kushtekova, PhD student at the West-Kazakhstan Marat Ospanov Medical University, Aktobe, Kazakhstan
Address: Almaty, microdistrict Aksay-4, building 123, apartment 73
Phone: 8 705 878 10 48
E-mail: aikerim_0105@gmail.com

Yermukhanova Lyudmila Sergeevna, Ph.D., Associate Professor, Head of the Department of Public Health and Public Health Care, West-Kazakhstan Marat Ospanov Medical University, Aktobe, Kazakhstan
Address: Aktobe, 195 Br. Zhubanovykh Street
Phone: 8 702 233 04 65
E-mail: yermukhanova@zkmu.kz