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**MASTER'S THESIS**

# TOPIC: ANXIETY DISORDERS IN MEN WITH INFERTILITY PROBLEMS

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# MAGİSTR DİSSERTASİYA İŞİ
# SONSUZLUQ PROBLEMİ OLAN KİŞİLƏRDƏ TƏŞVİŞ-HƏYƏCAN POZUNTULARI

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**TABLE OF CONTENTS**

# INTRODUCTION

**Relevance and level of development of the topic:** Some psychological disorders may occur in people with certain clinical problems, in which case doctors and psychologists should cooperate in the health system. The relevance of the topic is to investigate anxiety disorders and their interaction with other factors in men with infertility problems, and several important points are highlighted here. Infertility, as a widespread, multifaceted issue worldwide, has clinical and psychosocial impacts on human life. The difficult and long-term effects of medical interventions in infertility treatment, the acceptance of the diagnosis, social stigmas and the influence of the family can mutually affect the outcome of treatment and the level of psychological disorders in patients. The psychological aspects of infertility diagnosis and treatment can cause different reactions in patients. Infertile men are mainly unable to accept this diagnosis and this causes them to experience a high level of anxiety, and the long-term nature of the treatment, high effort and financial requirements can result in an increase in the level of anxiety of these patients and deterioration of their life activities. Since the psychosocial effects of infertility cause infertile men to constantly experience tension and problems in their interpersonal relationships in daily life activities, it is inevitable that these individuals will encounter psychological problems such as anxiety disorders. This study also emphasizes the importance of taking into account the psychological state of men undergoing infertility treatment and preparing a psychological support program and psychological support. Because identifying the anxiety level and other psychological problems of infertile men in advance has a positive effect on the outcome of medical treatment of infertility. Unfortunately, despite the prevalence of this problem worldwide, there are very few studies related to the psychophysiological and psychosocial impact of infertility on men, which creates a great obstacle to the education of infertile men and their seeking psychological support, and the lack of resources reduces the likelihood of early intervention and successful outcomes. Health systems, doctors and psychologists should pay attention to this topic, conduct more research, shed light on this topic and find ways to combat it. There has not been enough local and international research on the subject of this scientific work. Therefore, it is important to investigate the psychological aspects of the male factor of infertility and to apply psychological services. The scientific works of some authors related to this topic have been identified in international scientific sources:

- Maroufizadeh et al., 2018.
- Nagórska et al., 2023.
- Domar et al., 2023.

- de Vries et al., 2024.
- Lei et al., 2021.

**Object and subject of the study:** Male patients with infertility problems are the object of the study, the subject of the study is to investigate the relationship between this disease and anxiety disorders in infertile men and other factors affecting this relationship.

**Aims and objectives of the study:** The aim of the study is to more clearly study the anxiety levels of men with infertility problems and other influencing factors, to provide psychological coping methods and to make this topic relevant. Thus, this can improve the treatment outcome, quality of life, psychological state and interpersonal relationships of infertile men. Objectives of the study In order to determine the degree of anxiety disorders in men with infertility problems, the researcher's objectives may be as follows: 1. To review and compile a database of existing studies on infertility and its psychological aspects, long-term consequences of infertility and its impact on men. 2. To review and compile knowledge on existing studies on anxiety disorders and their psychophysiological correlates. 3. To determine the criteria and sample size for selecting individuals who can participate in the study. 4. To research instruments to determine the level of anxiety disorders and to select psychometric scales to measure them (e.g. Zung's Self-Rating Anxiety Scale and DASS 21). 5. To collect demographic and clinical data from the study participants. 6. To apply psychometric instruments to determine the level of anxiety disorders. 7. To analyze the data obtained using statistical methods. These tasks can help determine the level of anxiety disorders in men with infertility problems and help to understand the interaction of this disorder with psychological factors in more depth. As a result, it is possible to understand and direct the impact of psychological factors on treatment.

**Research hypothesis:**

- H1: The level of anxiety and stress in men with infertility problems is statistically significantly related to the level of social anxiety – accepted.

- H2: There is a statistically significant relationship between the level of anxiety and stress in men with infertility problems and the level of financial status – accepted.

- H3: There is a statistically significant relationship between the level of anxiety and stress in men with infertility problems and the level of education - rejected.

- H4: There is a statistically significant relationship between the stress related to infertility and family support and pressure - accepted.

**Research Methods:** The following methods were used in this study:

- Data questionnaire (prepared by us) for collecting demographic data (Appendix-1).

- Zung's self-assessment anxiety scale (Appendix-2).

- DASS 21 (Depression, Anxiety and Stress Scale 21) (Appendix-3).

Data questionnaire: In the study, an 18-item data questionnaire (age, marital status, employment level, financial situation, duration of infertility, education level, place of residence, family support and pressure, etc.) prepared by us was applied to collect important demographic data in men with infertility problems. DASS 21 (Depression, Anxiety and Stress Scale 21): The DASS-21 scale was developed by Syd Lovibond and Peter Lovibond in 1995. There is no adaptation of this scale to the Azerbaijani language. The DASS-21 scale, consisting of 21 questions, each with 7 questions, was used to determine depression, anxiety, and stress factors in men with infertility problems. The answers to the questions are on a Likert-type scale (never, sometimes, often, always). Zung's Self-Rating Anxiety Scale: This scale was developed by Dr. William W.K Zung in 1971 and has not been adapted to Azerbaijani. Zung's Self-Rating Anxiety Scale was used to determine the level of anxiety in infertile men. This method can determine the psychological, somatic symptoms of anxiety and the level of anxiety. This method consists of 20 questions and 4 Likert-type answers (rarely, occasionally, often, always).

**Scientific novelty of the study:** The scientific novelty of the study related to the study of the level of anxiety disorders in men with infertility problems can develop several issues:

- The impact of infertility on male psychology can be studied in more detail and awareness programs can be implemented in the society related to this topic.

- In general, more attention can be paid to psychological problems during clinical disorders and psychological counseling can be added to the medical package in health systems.

- The relationship between infertility and anxiety disorders can be studied in more depth and the impact of psychological symptoms on the treatment of clinical diseases such as infertility can be determined.

- Providing psychological support in infertility treatment can change the wrong stigma or thoughts in society.

- Male infertility can be evaluated as a biopsychosocial model, because the problem of male infertility is related to factors such as both medical and psychological, social stigma, and family relationships.

# CHAPTER I. LITERATURE REVIEW

## 1.1. Psychophysiological factors causing anxiety disorders

Anxiety disorders are a broad topic and are closely related to psychophysiological factors. It is impossible to exclude the connection of clinical disorders with stress or anxiety problems. To understand this topic, we can first examine the psychophysiology of stress. Based on the development of research over the past 50 years, the concept of stress has expanded further. Thus, stress is not only perceived as a mechanism activated in threatening situations, but also as an adaptive process that evaluates and copes with environmental events and deals with future problems. In other words, as a result of neurobiological studies, it became clear that there is a special system between the brain and the body, this system can be overloaded by physical and psychological pressures, and this can cause brain disorders and psychological diseases. There were many ideas about stress, stress biology can be considered as a set of positive and adaptive mechanisms that increase survival, and it became clear that stress is not only activated in a dangerous situation, but also a continuous process. That is, we are exposed to various positive and negative stimuli daily, we experience positive and negative stress. The human brain perceives stress stimuli and responds accordingly, the brain has a feature such as adaptive plasticity and elasticity. When a stressful stimulus is received, the brain's cortisol and allostasis factors try to ensure adaptation, when this function is used excessively, allostatic overload occurs. As a result, the development of some clinical diseases (cardiovascular, diabetes, affective disorders and mental problems (depression, bipolar disorder, post-traumatic stress disorder)) is accelerated. Stress hormone receptors act in the hippocampus, amygdala, and prefrontal cortex, and this led to adaptive plasticity. Adaptive plasticity is a concept that describes the shrinkage of dendrites and loss of synapses in these areas of the brain. Thus, it was learned through fMRI that stress caused the shrinkage of the hippocampus. According to neuroimaging studies, affective disorders affect the connections between brain areas, brain circuits, and cells. Studies have shown that stress affects the functioning of the brain and brain circuits at the molecular level, which explains the physiological and cognitive symptoms of some psychological disorders. Studying the neurobiology of stress has helped to unravel the biology of affective disorders. If we want to study and treat psychological disorders and their physiological effects on the body, we must first investigate the problem at the molecular level, that is, by going deeper. In summary, by studying the neurobiology of stress, its persistent and adaptive nature was determined, and preventing early traumatic experiences and proper psychological upbringing are very important for the healthy functioning of society (McEwen

& Akil, 2020). A biopsychosocial model was developed to determine the relationship between psychological disorders and medical diseases. The main focus was on the comorbidity between depression and cardiovascular diseases, lung diseases, and diabetes. Anxiety disorder is one of the most common psychological disorders. According to the US National Comorbidity Survey, the lifetime prevalence of this disorder is 16%. In 2005, comorbidity of anxiety disorders and medical diseases was investigated among the US population and it was determined that the percentage of people with medical diseases exposed to anxiety disorders is 2 times higher. In studies conducted in the United States in 2007 and 2009, 27.2% of people with anxiety disorders had comorbid arthritis, 7.2% had asthma, 10.5% had heart disease, 25.5% had hypertension, and 8.2% had diabetes. This mutual comorbidity prompted the investigation of the mutual causal mechanism of anxiety disorders and medical disorders. If we look at the clinical aspect of anxiety, we can note that anxiety is a concern about a possible or inpossible future threat, while fear is a reaction to an existing threat. Fear and anxiety are not pathologies, but both are adaptive physiological and psychological states. Anxiety is considered a disorder if it is excessive and impairs the person's life activities. It has been determined that comorbidity of anxiety disorders and other medical diseases, when known and reported to the patient, has a negative impact on the outcome of treatment and the general medical condition (Aquin et al., 2017). Sometimes patients feel more helpless and attempt suicide. Therefore, anxiety disorders must be accurately defined and determined taking into account the consequences of comorbidity. The mechanism of the occurrence of medical disorders that anxiety disorders can cause in the future was investigated. Investigating whether there is a cause-and-effect mechanism between anxiety disorders and medical illness was difficult. Because anxiety disorders were likely to spread throughout life and some medical illnesses were very common in the United States. However, according to a 2015 study, people with anxiety disorders are more likely to develop diseases such as arthritis, stroke, chronic pain, hypertension, heart disease, and peptic ulcers in the future. Another study found that 82% of people with gastrointestinal problems had social phobia before they were diagnosed. Some results were obtained regarding the physiological effects of stress or anxiety. Black's research on neurogenic inflammation suggests that chronic levels of psychogenic stress can lead to chronic inflammatory disorders. This may occur through specific biological mediators between stress and inflammation. In general, prolonged exposure to stress causes the body and other systems to wear and tear. In addition, people with anxiety disorders exhibit behaviors that may lead to clinical illness in the future. For example, behaviors such as smoking, alcohol use, or unhealthy eating habits can lead to other medical conditions. Medical conditions can also lead to anxiety disorders. As a result, it is clear that people with medical conditions can suffer from

psychological problems after a while. That medical condition can make the person socially dysfunctional or cause low self-esteem. For example, breast cancer in women or some chronic medical conditions. . Studies have shown that the incidence of post-traumatic stress disorder or anxiety disorder is higher after medical conditions. It has become clear that anxiety disorders and medical conditions contribute to each other, contributing to their long-term survival. They interfere with the effects of other treatments and contribute to the development of other diseases. People with heart disease who have comorbid anxiety disorders are more likely to die or suffer from other diseases. Biological and neurophysiological models can explain this comorbidity. The hypothalamus, amygdala, hippocampus, and striatal regions are thought to be involved in emotion and stress responses, and changes in neurotransmitter levels in these areas can contribute to anxiety disorders. Of course, genetic, environmental, and psychological factors contribute to this condition. The genetic percentage of anxiety disorders varies between 30-50%. Factors that cause anxiety disorders also increase the risk of some medical conditions. There is a finding that shared autonomic nervous pathways that pass through the brain and gut may link stress and inflammation, and in particular, people with anxiety often experience gastrointestinal problems. In comorbid disorders, it is very important for doctors or health professionals to receive biopsychological training to treat anxiety and medical conditions together, and the development and implementation of these programs can reduce comorbid conditions (Aquin et al., 2017). 7805 screening study found that people with anxiety disorders had significantly lower resting heart rate variability (HRV) than healthy people (Cheng et al., 2022). According to other studies, exposure to daily stress and psychological trauma can trigger cardiovascular diseases such as somatic diseases. It was determined that anxiety disorders can cause the onset and development of cardiovascular diseases. For example, anxiety disorders caused behaviors such as smoking and alcohol use, decreased physical activity, sleep and eating disorders, and deterioration of quality of life. These are factors that will develop cardiovascular disease. It was also determined that, according to the biological model, anxiety disorders can change the activity of various brain areas by affecting the autonomic nervous system, such as the hypothalamus and,s and plasma catecholamine secretion increases, resulting in cardiological disorders (Cohen et al., 2015). According to studies, there was a comorbidity between chronic pain and anxiety disorders. It was determined that patients with chronic pain were more likely to develop anxiety disorders. The reason for this is that constant pain affects the reward and motivation center, reduces motivation, the anti-reward system is stimulated and substances that increase stress are secreted, and the function of controlling stress and pain is disrupted (Chen et al., 2022). Also, high comorbidity was determined between mood disorders and anxiety disorders. Studies such as twin, genome, meta-analysis proved this idea and it

became clear that different mental disorders had similar risk factors for development (Saha et al., 2021). Anxiety disorders are highly comorbid with some medical diseases. It was determined that a gynecological disease such as endometriosis is a factor that causes deterioration of life activities and psychological disorders, sexual problems, and infertility. Endometriosis is a benign uterine disorder observed with infertility and menstrual pain. People suffering from this disorder mainly have parallel anxiety disorders, and anxiety disorders have a negative impact on the treatment of endometriosis and the level of symptoms. Anxiety disorders can increase pain from an emotional and cognitive perspective and can cause intolerance and sensitivity. Therefore, psychiatric intervention should also be used during treatment. According to the results, both somatic and psychological conditions improved in women who received parallel treatment. Assessment of the psychological state is very important in such somatic disorders. Several psychological inventories or scales, live interviews, and initial consultation can be applied (Laganà et al., 2017). In a study of 79 women suffering from endometriosis, 25.3% of patients had an anxiety disorder. This study used the Depression Anxiety Stress Scale, Endometriosis Health Profile, and Visual Analogue Scale (Zgierska et al., 2024). Anxiety disorders are also associated with infertility disorders, as well as other somatic diseases. Infertility is a disease that affects the lives of millions of people. The relationship between infertility and anxiety disorders, depression, has been highlighted through Assisted Reproductive Techniques. The impact of anxiety disorders and other psychological disorders on the treatment of infertility has been determined. Unsuccessful treatment results or a long-term treatment process have led to an increase in the severity of anxiety disorder symptoms (Gdańska et al., 2017).

### 1.1.1. Psychological characteristics of anxiety disorders

Anxiety is a disorder that negatively affects a person's social, family, interpersonal relationships, educational and professional areas, and causes dysfunction and distress. When faced with dangerous or difficult situations, the body can give psychological and physiological reactions. For example, we can feel anxious when speaking in front of a crowd or driving in bad weather. At this time, the concepts of fear and anxiety appear (Ministry of Health of the Republic of Azerbaijan, 2021). Sometimes the terms fear and anxiety are confused, let's try to understand, we can get excited several times in our daily lives, there can be various reasons for this, for example, a job interview, an exam, meeting a person for the first time, etc. An interesting question arises, what is the difference between our daily worries or concerns, fear

and anxiety? Although these terms are similar, they are different concepts. Fear is a reaction when faced with an actual danger, encountering a snake on the road causes a fear reaction and fear is activated as a defense mechanism. Anxiety is an emotional, mental and physiological reaction to a real or unreal danger that may occur in the future. Fear or anxiety has an adaptive nature, that is, as a result of these reactions, we become more responsible, we try to be prepared for exams, job interviews, and when faced with a real danger, we react to defend ourselves. However, if we are constantly anxious, our life activities, functionality will be disrupted and our interpersonal relationships will be disrupted, thus creating a psychological disorder. A tripartite model of anxiety was identified, that is, the anxiety reaction consists of 3 different components. Cognitive, behavioral and physiological components, in the cognitive component, the person worries about future events, has intense thought processes, builds scenarios related to that event, feels that he has lost control and becomes anxious. In the behavioral component, the person exhibits avoidance behaviors, for example, a person who feels anxious in crowded places isolates himself from people and does not leave the house. During the physiological reaction, the autonomic nervous system is activated and the heartbeat increases, shortness of breath, sweating, trembling, nausea, numbness in the hands and feet occur (Martin et al., 2017). Sigmund Freud also studied the concept of anxiety and noted that it was complex and mysterious. Because the nature of anxiety was diverse, its biological and psychological aspects were investigated. Anxiety is a negative psychological state characterized by the observation of physical tension in the body and anxious thoughts about a possible future event. Symptoms observed in the body include increased heart rate, sweating, shortness of breath, etc. Studies were conducted on mice to study anxiety disorders, but there were limitations because human and mouse reactions are different. It was noted that people are more productive when they are a little anxious. Howard Liddell noted that anxiety is a shadow of intelligence. That is, a person's ability to predict the future is related to the feeling that everything will turn out badly. It is as if this feeling tries to prepare us in advance for bad events. When this worry or anxiety is excessive, it disrupts our functionality, for example, excessive stress or anxiety does not allow us to focus on questions in an exam. At the moment of anxiety, the autonomic nervous system is activated and the fight or flight mechanism is realized. Fear is realized during a real threat and the flight mechanism is mainly revealed. How does anxiety generally develop and manifest in humans? Evidence shows that we have inherited biological anxiety. However, in these or other disorders, the main factor is not only genetic factors, but also environmental factors, stress factors, physiological and psychological problems. The causes of anxiety have also been linked to neurotransmitter systems (Durand et al., 2017). The GABA-benzodiazepine system and its decrease in gamma-aminobutyric acid, changes in the level of noradrenergic and amylin

systems are among the factors that cause increased anxiety, and the limbic system, which is a brain area associated with anxiety, also affects the level of anxiety. Researchers have found that during anxiety, a special circuit is formed in the brain, the limbic system directs danger signals to the necessary brain areas, where the amygdala plays a special role. According to studies, in people with anxiety disorders, the amygdala or limbic system tends to be hyperstimulated or reacts more to new information. However, the right psychological intervention, such as cognitive behavioral therapy, can effectively affect these disorders. When examining the psychological aspects of anxiety disorders, an integrated anxiety model emerges. Thoughts about the reliability or insecurity of the world and people, and whether we believe or not that we can overcome difficulties are formed from childhood. The main factors influencing this are the parental factor, the environment, the upbringing style and psychological life experiences. Depending on the upbringing style, a sense of control over oneself and the events that occur is formed in children. If a person's basic needs (biological needs, care, trust, love) are not met by the family from childhood and positive experiences are not experienced, anxiety and other mental problems may arise. If a parent teaches a child to overcome difficulties and develops these skills, allows them to explore their world and gain experiences, a healthy sense of control will be formed in those children. As a result, in unexpected and difficult situations, these people will be psychologically stronger and less susceptible to anxiety disorders. However, since children who grow up in conservative families cannot learn to cope with difficulties in their early experiences, a healthy sense of control is not formed and they are more susceptible to anxiety disorders. When we look at the social aspect of anxiety disorders, social factors trigger our biological and psychological vulnerability related to anxiety. For example, divorce, problems related to work or education, problems in interpersonal relationships, bereavement, bullying, etc. Thus, the theory of triple vulnerability is formed. The 1st is generalized biological vulnerability, the 2nd is generalized psychological vulnerability, and the specific psychological vulnerability. This model feeds on itself and a small stressor can activate it (Durand et al., 2017). The symptoms of anxiety disorders are somatic and psychological. Somatic symptoms include the following: shortness of breath, ıncreased heart rate, chest tightness or tightness, dizziness or headaches, feeling of weakness and fatigue, sweating, nausea, abdominal discomfort, numbness in different parts of the body, tremor, feeling of increased body temperature, dry mouth. The psychological symptoms of anxiety disorder include the following: feeling of restlessness, sensitivity, attention problems, fear of death, fear of going crazy, fear of losing self-control, fear of losing reality. Based on risk factors, biological risk factors that may lead to the development of anxiety disorders include: Genetic predisposition, diabetes, pheochromocytoma, vitamin deficiency, alcohol, caffeine, cocaine and certain drug use, brain

tumors, thyroid diseases and infectious diseases. Psychological risk factors for anxiety disorders: Disruption of daily routine, bereavement or loss, high levels of stress, undesirable lifestyle, interpersonal problems, not getting married or being widowed, psychological trauma, sexual assault trauma. Social risk factors causing anxiety disorders: Low social security, unemployment, living in dangerous conditions, negative working conditions, economic and political crisis, inability to benefit from medical and social assistance (Ministry of Health of the Republic of Azerbaijan, 2021). In general, many studies have been conducted on anxiety disorders, and one of the studies notes that anxiety disorders are considered the most common psychological disorder in European countries and have a 14% prevalence rate in people aged 14-65 within 1 year. Women suffer from this disorder more than men. The World Health Organization notes that anxiety disorders are ranked 6th among all psychological and medical diseases in the world, and 4th in highly developed countries. The International Classification of Diseases (ICD-10) provides a classification of anxiety disorders (panic disorder F40.00, agoraphobia F40.01, social phobia F40.1, specific phobia F40.2, other phobias F41.0, generalized anxiety disorder F41.1). This disorder usually begins in childhood or adolescence and can lead to the development of other disorders. Because this disorder has a high comorbidity, early diagnosis and intervention can prevent the development of other psychological and medical disorders (Ströhle et al., 2018). Different subtypes of anxiety disorders have emerged in different cultures, for example, taijin kyo-fusho, a disorder related to social phobia in East Asia, which means behaving badly or embarrassing other people (Craske et al., 2017). When we look at the etiology of anxiety disorders, we can understand the influence of the learning process. Because a person can verbally learn to fear and worry about stimuli from childhood, a parent can tell a child that certain stimuli are dangerous, children can observe that others experience stress when they encounter certain situations, and those who have experienced traumatic experiences in childhood may become anxious about certain stimuli in the future. It is clear from these examples that there are two types of learning: classical conditioning and operant conditioning. In type 1 learning, a neutral stimulus is paired with an aversive stimulus through repeated processes. In type 2 learning, the choice is learned with reinforcement (reward) if it is positive, and with punishment if it is negative. Risk factors for anxiety disorders include physical and sexual abuse, parental neglect and loss, early stressful experiences, and a conservative family. Brain imaging methods have shown that children exposed to these risk factors, unlike other healthy children, often develop fear circuits in their brain areas, namely the prefrontal cortex and amygdala. This may explain the occurrence of anxiety disorders. Also, physiological sensitivity to anxiety disorders and hypersensitivity to physiological arousal and hypersensitivity to carbon dioxide can be etiological causes. When

the amount of this gas in the blood increases slightly, symptoms such as panic attacks can occur. According to studies, another etiological cause of anxiety is related to evolution, that is, in evolution, fear of the environment and being prepared helped to survive. (Martin et al., 2017). Neurobiological studies have been conducted to understand the cause of anxiety disorders and people with anxiety disorders have higher sensitivity to danger, psychological and physiological reactions. (Penninx et al., 2021). Brain imaging studies have helped to understand the mechanism of anxiety in more detail. For example, it was determined through MRI that there was a change or pathology in the right temporal lobe of a patient suffering from anxiety disorder, and another brain imaging study revealed that a person with anxiety disorder had abnormalities only in the right hemisphere. In studies related to anxiety disorder using tools such as PET, fMRI, MRI, and EEG, abnormalities were identified in the frontal cortex, occipital, and temporal lobes. Based on these studies, it was determined that anxiety disorder is a disease closely related to the neuroanatomical structure of the brain. For example, the limbic system is actively involved in the generation of fear and anxiety reactions. The cerebral frontal cortex also interacts with the parahippocampal region, cingulate gyrus, and hypothalamus. A link has been identified between these areas and anxiety disorders (Sadock et al., 2019). According to studies, the pathogenesis of anxiety disorders is multifactorial, that is, environmental factors, biological factors and psychological influences interact with each other. The current effects of epigenetic mechanisms on the estimated risk mechanisms of anxiety disorders were investigated (Schiele & Domschke, 2018). In another source, epigenetic mechanisms played a special role in the development of anxiety disorders. Epigenetic mechanisms are biochemical processes that affect the spatial structure of DNA without changing the DNA sequence and have plasticity. That is, this mechanism affects gene activity and has temporary plasticity that can be changed by life experiences and psychological therapies. Epigenetic mechanisms can have adaptive or maladaptive effects. This may determine the occurrence or absence of anxiety disorders by integrating environmental risks with genetic factors. It has been determined that people with a genetic factor are 3-5 times more likely to develop anxiety disorders than other people (Ströhle et al., 2018). Unfortunately, health systems sometimes fail to properly diagnose and treat anxiety disorders, and due to poor awareness, patients with anxiety disorders do not seek psychological support. Epidemiological differences observed in different cultures were not related to the culture, but to differences in methodology. This disorder has a high comorbidity with other disorders. Epidemiological studies and studies can help to understand the treatment and etiology of anxiety disorders and to develop research on this (Bandelow & Michaelis, 2015). The average age of onset of anxiety disorders and their subtypes was 21.3 years. 1028 studies were conducted on this fact and it was determined that methods of combating anxiety

disorders should take into account the age of onset of anxiety disorders. Because this age period is sensitive and prone to the development of anxiety disorders. However, it was determined that there is no gender difference in the age of onset of anxiety disorders. Men and women have the same sensitivity in terms of age of onset. Anxiety disorders have a lifetime prevalence of 34% in the United States (Lijster et al., 2017). Sex differences in the neurobiology of fear have emerged. Anxiety disorders are observed twice as often in women as in men. There were various reasons for this. For example, the characteristics of the formation and extinction of fear memories are different in women and men. In addition, the hormone estrogen affects the fear mechanism, which was determined in a study conducted in female rats (Craske et al., 2017). The cause of gender differences in anxiety disorders was associated with hormones that affect stress metabolism. It was determined that women are more sensitive during certain periods (menstruation, pregnancy, childbirth, etc.), there is a change in hormonal balance, and at this time the likelihood of developing anxiety disorders is higher. This fact led to the investigation of the relationship between the hormone estrogen and the stress mechanism. It was determined that sensitivity to stress occurs due to low levels of estrogen in women. In general, high or low levels of estrogen can cause various psychological and somatic problems. It was determined that the hormone levels of the ovaries of women undergoing treatment for anxiety disorders should be examined, this is a very important factor for treatment. The hormone progesterone also affects emotional processes, and it was found that high levels of progesterone increase cortisol levels. This leads to increased stress. Testosterone also has an effect on stress mechanisms. Studies have shown that testosterone reduces anxiety or fear, and has a positive effect on cognitive abilities. These findings may lead to a different and new approach to the treatment of anxiety disorders, for example, taking into account individualized and gender-specific characteristics (Maeng & Milad, 2015). Anxiety disorders can be over-represented in primary care settings, but lack of sufficient information, incorrect presentation, and insufficient time spent with the patient can create major problems in diagnosis and treatment. To prevent this, programs that develop healthcare professionals should be developed (Love & Love, 2019). Care should be taken in diagnosing anxiety disorders, as patients suffering from this disorder mainly report problems related to heart and respiratory problems when seeking health services. Globally, anxiety disorders are considered one of the most commonly diagnosed psychological disorders, but they are not adequately treated. Psychodynamic, interpersonal, cognitive-behavioral therapies can be used in psychological treatment (Penninx et al., 2021). In general, some psychological scales can be used in the diagnosis of anxiety disorders, for example, the Generalized Anxiety Disorder 7-item Scale (GAD-7), the Liobowitz Social Phobia Scale, the Agoraphobia Scale, the Panic Disorder Scale, and the Specific Phobia Scale can be useful in

diagnosis. Both pharmacological and non-pharmacological treatment methods can be applied in the treatment of anxiety disorders. During non-pharmacological treatment, symptoms and the level of distress and functional impairment should first be determined, as well as signs of depression, alcohol and psychoactive substance use, other concomitant somatic and psychological diseases, and previous treatment history should be taken into account. Then, the patient should be informed about the anxiety disorder and its effects, treatment, and a treatment plan should be developed. (Ministry of Health of the Republic of Azerbaijan, 2021). The most effective non-drug treatment method for treating anxiety disorders is cognitive-behavioral therapy (CBT). Other therapies may also be used, this may also depend on the patient's preference. In this therapy, exposure therapy can be particularly effective in treating anxiety disorders. For example, a patient with agoraphobia traveling alone by train is a technique for this. This technique should be performed step by step under the supervision of a psychologist. It has even been determined that CBT is more effective and beneficial than placebo medication(Ströhle et al., 2018). Drug treatment is applied in severe anxiety disorders or if non-drug treatment is not effective for 4-12 weeks. At this time, the patient should be informed about the treatment and its side effects and benefits. Antidepressants such as selective serotonin reuptake inhibitors (SSRIs) are most commonly used in anxiety disorders (Ministry of Health of the Republic of Azerbaijan, 2021). Several studies have been conducted to study the effect of CBT on anxiety disorders. One study analyzed the effect of CBT treatment on anxiety disorder symptoms. According to a meta-analysis, symptoms of some anxiety disorders decreased moderately after 12 months of CBT treatment. In general, anxiety disorders are treated more effectively with a long-term course of treatment. It has been found that long-term treatment effects and high-quality randomized trials in anxiety disorders are important to facilitate longer-term effect size calculations (Van Dis et al., 2020). It was found that pharmacological and psychological interventions used to treat anxiety disorders modulated the activity of the circuit between the dorsomedial prefrontal cortex, insula, and amygdala (Giacobbe & Flint, 2018). Proper lifestyle, healthy nutrition, and physical activity are particularly important in the treatment of mental disorders. Evidence suggests that less physical activity or physical activity is associated with a risk of psychological disorders. For example, a study of 267,000 people found that people who engaged in more physical activity were less likely to develop psychological disorders. Aerobic exercise can mainly manage depression and anxiety disorders. The neurobiological and behavioral mechanisms that improve with exercise can contribute to the development of specific and more useful coping strategies or programs (Smith & Merwin, 2021). People who seek psychological help may have problems for several reasons. According to research, people with low socioeconomic status suffer from more

psychological problems than people with high socioeconomic status and are less likely to receive treatment. According to a study conducted in the United States, people with higher economic status are offered more treatment options. It was found that people with low socioeconomic status were 4.1% less likely to be offered psychological help than those with high socioeconomic status (Niemeyer & Knaevelsrud, 2023). According to 30 years of research, cognitive behavioral therapy is an effective intervention for anxiety disorders. However, the effect of this therapy on anxiety disorders has not increased in recent years. New methods should be developed to increase the effectiveness of CBT ( Hofmann et al., 2025).

### 1.2. What is male infertility? its psychosomatics and long-term consequences

Infertility is the failure to conceive despite 1 year of regular, unprotected sexual intercourse. Male infertility is one of the main disorders studied in andrology, urology and endocrinology. Men with infertility problems do not have the reproductive capacity. Male infertility has various etiological causes, and this can create problems in determining the correct treatment, and several pathologies can occur along with infertility. Each of these disorders must be treated so that the treatment of the infertility disorder is successful. In the case of infertility, 15% of couples cannot have a child within a year without any protection and despite continuous sexual activity. In infertility, 20% of male factors are important, and 30-40% of male and female factors are important. In male factor infertility, sperm parameters should first be analyzed. At the same time, sexual dysfunction and penile deformations should also be identified. Because these disorders can also cause infertility. For proper and successful treatment, an accurate diagnosis must be made, while some pathologies can be treated, some pathologies cannot be cured with treatment. If this is the case, there is no need for unnecessary and stressful long-term treatment. Infertility problems can be treated with methods such as in vitro fertilization and intracytoplasmic sperm injection. Male and female factors should be considered in parallel during a healthy pregnancy. In women, attention should also be paid to ovulation, patency and functional status of the fallopian tubes, and the condition of the cervix and uterine cavity. In general, the main goal of investigating male infertility is to identify reversible causes, to identify cases where treatment is not possible and where assisted reproductive technologies (ART) are needed, to investigate whether donor insemination or adoption are the only solution if ART is not beneficial, and to identify genetic factors that may have an impact on the child in the future when ART is used. In the problem of infertility, several vital disorders may occur in parallel: testicular cancer, pituitary tumor, if these disorders are not treated, they can cause death or

serious diseases in the unborn child, a high mortality rate has been determined for these disorders and are among the rare causes of infertility, for example, central nervous system tumors, pituitary tumors, adrenal carcinoma, Klinefelter syndrome, Kallmann syndrome, testicular tumors, Cartagena syndrome, spinal cord trauma, diabetes, sclerosis (Ahmedov et al., 2021). According to studies, there was a relationship between the outcomes of assisted reproductive technology and paternal medical comorbidities. That is, 27% of 2690 men receiving ART treatment had at least 1 medical condition. For example, those with nervous system disease, respiratory system and musculoskeletal system, and endocrine system diseases had lower pregnancy rates and live birth rates than those without (Eisenberg et al., 2016). When investigating male infertility, a sexual history and 2 consecutive sperm analyses are first applied. Since infertility is a complex topic, it should be investigated in detail and all its causes should be identified. Therefore, attention is paid to some details in the anamnesis: Frequency and timing of sexual intercourse, Duration of infertility and previous fertility, Childhood diseases, Development during childhood and puberty, Other diseases and surgeries, Sexual life, Sexually transmitted diseases, Exposure to gonadal toxins. When a certain pathology is identified in the sexual anamnesis and sperm analysis, other steps of treatment should be started immediately. At this time, other diseases, infections, surgeries and medications used should definitely be investigated (Ahmadov et al., 2021). 85% of the causes of infertility disorders are identifiable, while the other 15% are unexplained infertility. The most common causes of infertility problems are ovulation dysfunction, tubal disease and male factor infertility. Other environmental influences (social influences, lifestyle, nutrition and psychological state) are also factors affecting infertility. Low testosterone concentration and low sperm count in infertile men are observed in 35% of infertile couples. In general, if infertility is a problem, both the man and the woman should be examined and support each other in treatment. It has been determined that infertility is a risk factor for endometrial and ovarian cancer (Carson & Kallen, 2021). For example, symptomatic and asymptomatic infection of the male urogenital system is a factor causing male infertility. This infection damages the testicle, causes blockage of the seminiferous tubules and reduces the quality of sperm. It also spreads to the entire male reproductive system. For proper intervention, radiological, genetic, endocrine and hormonal evaluation of infertility, semen analysis are essential. If the sperm count in the spermogram is less than 10 million as a result of the analysis, some hormones should be tested. The most commonly tested hormones are testosterone, follicle-stimulating hormone (FSH), and luteinizing hormone (LH). Infertile men generally have high FSH levels, which is associated with pathology in spermatogenesis. Semen analysis is particularly important to determine the causes of male infertility. Also, semen analysis should be investigated to investigate fertility

capacity and deficiencies (Ahmedov et al., 2021). Infertility is considered a medical and social burden. In particular, to manage male infertility, it is necessary to first investigate its causes. There are several factors that affect male infertility. For example, anatomical abnormalities, oxidative stress, varicocele, endocrine disorders, genetic or epigenetic changes, and infections. Another reason is that sperm DNA fragmentation can also cause male infertility. Fertility in men is associated with sperm parameters. During the fertilization method used in infertility treatment, it is important to select sperm with high-quality DNA integrity. This is a factor that affects fertilization and the later stages of pregnancy. Before infertility treatment, the causes of infertility in couples should be investigated in more depth. Studies have found that high levels of sperm DNA fragmentation (SDF) were detected in the spermatozoa of infertile men and were associated with infertility. Factors associated with increased levels of SDF in infertile men have also been identified. These factors include varicocele, reactive oxygen species, lifestyle, genital infections, age factor, chemotherapy for testicular cancer, radiotherapy, genitourinary infection and smoking. It is very important to determine SDF before infertility treatment, because this factor leads to poor embryo quality, reduced pregnancy rates and increased miscarriages during in vitro fertilization. Semen analysis tests and sperm function tests should be used to determine the correct diagnosis, causes and treatment direction of infertility. Factors that cause DNA damage include abnormal chromatin packaging during spermatogenesis, apoptosis in the epididymal sperm process, oxidative stress and varicocele, obesity, infections, age, fever and toxins, and medications. In general, age is negatively correlated with sperm quality. The clinical consequences of SDF include not only infertility, but also birth defects. SDF treatment prevents the genetic transmission of DNA damage. This once again emphasizes the importance of determining SDF. Idiopathic couples, men over 40 years of age, and men exposed to toxicants should definitely undergo DNA fragmentation tests and be examined during infertility treatment. A healthy lifestyle is a prerequisite for normalizing SDF levels. Therefore, it is important to exercise, stop smoking and drinking alcohol, and manage weight through a healthy diet (Andrabi et al., 2024). In 1970, it was determined that mammals have free radical compounds. For example, reactive oxygen compounds belong to this group. Reactive oxygen compounds play a special role in the normal functioning of cells, but when these compounds are in excess, they damage the cell and disrupt its functionality. Oxygen radicals are inactivated by the antioxidant system; if the number of oxidants exceeds the number of antioxidants, oxidative stress occurs. Oxidative stress disrupts cellular functionality. The effects of these compounds on the reproductive system are significant. For example, reactive oxygen species affect spermatozoa's ability to fertilize, acrosome reaction, and spermatozoa-oocyte fusion. Oxidative stress can cause varicocele and chronic urological disorders. High levels of reactive

oxygen species have been identified in semen samples in 25-40% of men suffering from infertility problems. Reactive oxygen species are formed due to leukocytes and morphologically abnormal spermatozoa in the semen. The amount of damage caused by oxidative stress depends on the structure and amount of oxygen radicals, the surrounding ions, proteins, and the amount of oxygen, and the temperature. Oxidative stress can also damage sperm DNA, for example, some fragments in DNA may change or be lost, and there may be breaks in both strands of DNA. DNA-damaged spermatozoa may have impaired fertilization ability or early embryonic death and spontaneous abortions may occur, and in general, the probability of pregnancy is very low in these cases. The antioxidant reserve of seminal fluid is a system that prevents the formation of oxidative stress (Ahmedov et al., 2021). In order to determine male infertility, attention should also be paid to the physical examination. Primary and secondary sexual characteristics should be examined. Among the secondary sexual characteristics, attention should be paid to body shape, hair growth and mammary glands. Some androgenic disorders may be observed during physical examination in men with infertility problems. For example, a body structure with long limbs inclined forward can be determined. The lengths of the upper limbs are longer than the height, and the lower limbs are longer than the trunk. Thus, the person appears short when sitting, and very tall when standing. If this disorder occurs after puberty, there is no change in body shape. Long-term andrological disorder can cause curvature of the lumbar vertebrae and fractures of the femurs. It was determined that andrological disorders cause the distribution of adipose tissue in the pelvic and lower abdominal areas and a decrease in muscle mass in men, and disrupt the body shape. This disorder can affect the voice, sense of smell, hair and skin changes. For example, if andrological disorder occurs before puberty, a male-type voice cannot be formed as age increases, but if it occurs before this period, there is no change in the voice. Also, hair growth is very weak, fine wrinkles appear around the mouth and eyes at a young age, and the skin becomes dry and pale. During gynecomastia, the mammary glands of men develop. High development of gynecomastia can cause serious disorders in the reproductive system. Another type of infertility is genetic infertility. Genetic pathology has been identified in 10% of infertile women and 15% of infertile men. For example, chromosome mutations can often be seen in male infertility. Chromosome mutations are observed in 2-8% of infertile men, and in 15% of men with azoospermia. Klinefelter syndrome is the most common sex chromosome pathology. Such patients are likely to have children only through assisted reproduction. Other chromosome mutations include Robertsonian translocation, X-autosome and Y-autosome translocation, reciprocal translocation, and Y chromosome microdeletions. Another factor affecting infertility is gene mutations. Gene mutations affect the formation of sex and the development of the testicles, and

this can cause infertility problems (Ahmedov et al., 2021). There is a secondary form of male infertility. In this case, etiological factors should be investigated, because this problem was not previously present in the patient, and then the etiological factor caused infertility. If this disorder can be corrected, male fertility will improve. Classification of etiological causes of secondary infertility:

1. Impaired sperm excretion

a) Neurogenic causes: Spinal cord injuries, Testicular histology disorders, Changes in sympathetic tone, chronic infection, hormonal pathologies, Retroperitoneal lymphadenectomy, Endovascular interventions in abdominopelvic surgery, Diabetes mellitus and other neurogenic diseases.

b) Iatrogenic causes: surgical operations, pharmacological agents, other causes and cocaine, narcotic substances, high levels of alcohol consumption.

The diagnosis of secondary infertility consists of several steps. First, anamnesis is taken, then physical examinations, laboratory and instrumental examinations and genetic studies are performed. The anamnesis of men with secondary infertility problems mainly included infections, physical trauma, constant medication, radiation and surgery. Several anamnesis are used in the diagnostic process. (Medical anamnesis, surgical anamnesis, sexual anamnesis, family anamnesis (past and current treatments, past marriages and pregnancies, miscarriages and births, evaluation of the female partner), examination of childhood and adolescence). All of this applies to the examination plan for secondary infertility. In general, before treating secondary infertility, attention should be paid to information about the patient's lifestyle (Ahmedov et al., 2021). For example, sports: engaging in heavy physical activity, excessive cycling can negatively affect spermatozoa. Also, heavy physical exercise can affect the normal level of some hormones (decreased testosterone, increased cortisol), this condition affects the proper functioning of spermatozoa, environmental factors: emotional stress and stress hormones related to psychological conditions, neurochemicals, poor nutrition, excessive or low protein intake are factors that contribute to infertility and negatively affect its treatment, coital factors. Occupational activity: people working in industry and agriculture are exposed to some toxins, and these toxic compounds disrupt the quality and concentration of spermatozoa. This mainly occurs in people working with metals such as lead, cobalt, cadmium, magnesium. To protect yourself from the effects of these substances, it is important to use protective equipment or stay away from these metals, and take zinc and selenium. Taking certain medications and chemicals: Smoking, alcohol, chemotherapy and radiation, some medications. Drinking large

amounts of alcohol disrupts the function of the testicles, causing erectile dysfunction and infertility problems. A decrease in the number, movement and morphology of sperm in men who smoke have been identified, and symptoms are more severe in men who have varicocele and smoke. The effects of chemotherapy on the reproductive system or sperm vary depending on the duration and regimen. Therefore, sperm must be frozen before receiving chemotherapy. The effects of radiotherapy on cells vary depending on the dose of radiation and the duration of administration. As a result, men with infertility problems should pay attention to their lifestyle, eat healthy sleep and food, maintain a diet rich in vitamins B and C, avoid being overweight, and be informed about not wearing tight pants or underwear. Several treatment methods can be used in the treatment of infertility. For example, in vitro fertilization is a useful tool in the treatment of immunological infertility (Ahmedov et al., 2021). One of the main methods in the treatment of infertility is the in vitro fertilization method. In 1978, the first human being was born as a result of fertilization. This event gave direction to the development of infertility treatment and the management of hereditary monogenic diseases (Fishel, 2018). Empirical treatment of male infertility is based on medications. Additionally, hormonal and non-hormonal treatment is used. Couples undergoing infertility treatment should receive sexual education programs, they should be informed about the timing and frequency of sexual intercourse. A woman should know the time of ovulation. Too much or too little sex can reduce the chance of pregnancy. Specific and empirical forms of treatment can be applied in treatment.

a) Interventions related to specific treatment: endocrine treatment, treatment of infection, immunological treatment, treatment of ejaculation disorders, treatment of erectile dysfunction

b) Empirical treatment: hormonal treatment, non-hormonal treatment

c) surgical treatment

d) Assisted Reproductive Therapy Methods (ART)

Men with secondary infertility problems should receive surgical and conservative treatment as a first step, if there is a hormonal pathology, testicular stimulation should be applied and if there is no spontaneous pregnancy after 1 year, ART is applied. Couples who get married late for certain reasons have a reduced chance of having children due to increasing age. Although the problem of infertility in aging women has been studied, the problem of infertility and its effects in aging men have not been sufficiently studied. As the age factor increases, it leads to a decrease in sexual activity, pathologies in the reproductive system and a decrease in sperm quality, and an increase in the likelihood of pathologies in the child to be born. The effect of age on infertility has not been studied in detail. The genetic effects of the age factor, that is,

aging, have also been determined. As paternal age increases, the number of genetic and chromosomal mutations also increases, because mutations occur in DNA as we age. It was determined that the occurrence of mutations for fathers under 29 is 0.22 out of 1000, and for fathers aged 40-44, this probability is 4.5 out of 1000. These mutations or changes can cause kidney diseases and cardiological problems in the child born. In general, when the paternal age is over 40, the probability of birth anomalies may increase by 20%. The American Fertility Association states that people under 50 are more suitable for sperm donation. All of this information should be taken into account and paid attention to in infertility treatment, so treatment should be started at an early age and people who want to become fathers at an older age should be informed about it. Also, testosterone levels decrease with age, which can affect the likelihood of having children (Ahmadov et al., 2021). Various treatment methods can be used in the problem of infertility. For example, sperm donation and treatment methods with their own gametes. Infertility is perceived as a stress that affects the family relationships and interpersonal relationships of couples, in which mutual communication, empathy, and finding solutions to problems together are very important. This study examined the changes in couples' family relationships during and several years after infertility treatment, and this study was conducted between two different groups (group 1 was those who received treatment with sperm donation, and group 2 was those who received treatment with their own gametes). For men in group 1, this treatment method was a difficult experience. Their infertility and other stigmas could lead to low self-esteem, depression, and damage to family relationships. These couples are exposed to many questions from family and friends during treatment, so many couples hide this problem and do not share it with their surroundings. When using donor sperm for treatment, couples experience different emotions, and this can cause problems in their family relationships. Men generally do not want to talk about this treatment method because this topic is tabooed by people. Keeping the infertility problem secret for couples can have a positive effect on their relationship, they can solve this problem between themselves and make the right decision. That is, couples should join the treatment together and support each other so that the result and family satisfaction are positive (Ahmedov et al., 2021). Studies in Denmark show that the experiences gained in infertility treatment have a positive effect on the marriage of these couples, they are more tolerant of stress and understand each other better than non-infertile couples, their relationship is more stable, because these couples have shared their troubles, secrets, joys and sorrows together. The psychosocial stress that infertility creates has encouraged couples to find certain solutions. In the study, questionnaires were prepared to collect demographic information and the ENRICH scale was completed with both groups during treatment and 2-5 years after treatment. In the study, 330 people could participate in the sperm donation treatment group and

only 98 people fully participated and answered the first and second assessments of the ENRICH inventory. In the comparison group, 424 people applied and 122 people participated in the first and second assessments of the ENRICH inventory. There were 10 categories of the ENRICH inventory. The men participating in the study were older than the women and had a lower level of education. In the 1st phase of the study, couples in both groups rated their relationship well according to the ENRICH inventory and there was no difference between the two groups. Women were more likely to share their problems with people and seek social support, while men tried to find a planned solution. There were some important points for the course of treatment. For example, the clinical and psychological health of these couples, the stability and continuity of family relationships, the desire and responsibility to have children, telling the child the truth about his biological parent in the future, etc. The main aim of this study is to compare the relationship between the quality of family satisfaction of infertile heterosexual couples before and a few years after sperm donation treatment, and the quality of family satisfaction between couples who received sperm donation treatment and couples who received treatment with their own gametes. (Sydsjö et al., 2014). It is clear that infertility causes problems in social relationships, education, professional relationships, and family communication in men. A study conducted in Serbia investigated the relationship between infertility treatment and the quality of life and psychological state of infertile men. The findings suggest that infertility is a high risk factor for psychological disorders, and that increasing treatment duration also leads to a decline in psychological state. Also, longer treatment duration affects lower scores in the emotional role domain. Another result was that longer treatment duration for infertility has an effect on sperm quality. Thus, oligospermia and azoospermia were observed more frequently in infertile men. Also, a correlation was found between smoking and asthenozoospermia, and obesity or overweight was observed in more than 66% of infertile men in the study. These factors have a negative impact on infertility treatment, psychological state, and other reproductive health issues (Čegar et al., 2023).

### 1.2.1 Anxiety disorders in men with infertility problems and their interaction with other factors

For effective management of infertility, gynecologists, embryologists, andrologists and psychologists should collaborate as a team. Related studies have been conducted and the main objectives here are as follows: To inform infertility specialists with the latest innovations for the correct intervention of infertility, to collect the evidence base and review important studies

and guidelines related to infertility, to provide initial referral programs (Malhotra et al., 2024). The increasing number of studies on the interaction between infertility and psychological disorders is useful in the treatment of infertility and the management of its psychological aspects, and in the emergence of new knowledge about infertility. The number of studies related to this topic has increased in the last 10 years. Extensive studies on this topic have been conducted mainly in countries such as the USA, China, and England. The studies focused on the psychological aspects of infertility, the emotional consequences of infertility treatment, and the role of psychological intervention and educational programs. According to the results of the research, it is important to develop a multidisciplinary approach, psychological support services and pay attention to socio-cultural factors (Zhu et al., 2022). To understand the stress and anxiety associated with infertility, it is necessary to pay attention to the following points:

- Emotional state caused by infertility.

- High level of anxiety.

- Decreased interest and activities, social isolation or withdrawal from people.

- Anxious thoughts about the future.

- Deterioration of family relationships.

Some psychological disorders are observed during the problem of infertility, these disorders should be identified and appropriate psychotherapy should be selected. For example, anxiety disorders, depression, mood disorders, self-esteem problems, and problems in family relationships are included here. Cognitive-behavioral therapy can be used as the most effective method for treating these psychological disorders. Dialectical behavioral therapy, acceptance and commitment therapy, and interpersonal therapy can also be applied (Dube et al., 2021). Infertility is both a clinical and psychosocial condition. Because a person with infertility problems can also have psychological problems (depression, anxiety, interpersonal problems). In general, infertility is defined as the absence of medical pregnancy after a year or more of regular unprotected sexual intercourse. Both sides should be taken into account during examination and treatment. Many studies have been conducted on this topic, for example, it was hypothesized that anxiety develops in couples with infertility problems and affects marital satisfaction or happiness, that the level of anxiety in infertile men and women is different, that these couples are exposed to common psychosocial influences and have similar experiences. To prove these hypotheses, a study was conducted in Iran and 141 couples who applied for infertility were given consent to fill out some questionnaires for the study. These couples could

participate in the study: those diagnosed with infertility; 18+ years old; those who knew Persian. Demographic data of infertile couples were collected, and several statistical analysis methods were used (APIM Actor-Partner Interdependence Model CFI Comparative Fitness Index CFM Common Fate Model DDA Binary Data Analysis EMS Scale ENRICH Family Satisfaction Scale HADS Hospital Anxiety and Depression Scale MIM Interaction Model). According to demographic data, in infertile couples, the man was 5.10 years older than the woman, mostly had the same level of education and the duration of infertility was between 3-4 years, and the reasons were related to men in 36.2%, women in 21.3%, and other reasons in 19.1%. These couples had experienced at least one failure in previous infertility treatment. Thus, these research methods investigate dual-nature processes and it was found that there is a negative relationship between anxiety and family happiness, that is, in infertile families, both the individual's own anxiety and the anxiety of his partner affect the marital happiness of the individual. In addition, anxiety in these couples is more common in women than in men. (Maroufizadeh et al., 2018). Since this diagnosis causes psychological stress in patients, factors affecting the level of self-esteem and the degree of acceptance of the disease of infertility were investigated. In this study, conducted in Poland, 456 patients participated and a personal information form, Rosenberg Self-Esteem Scale, and Illness Acceptance Scale were used. The differences between women and men in these variables were also examined. Men had higher self-esteem and illness acceptance scores than women, and age and education level also affected these factors. It was found that self-esteem increases with age and education level, and there is a positive relationship between education level and illness acceptance in women and self-esteem in men. Infertile couples may experience psychological stress and disorders for various reasons, for example, having children is one of the main issues in society and the family has a special place in the social role. The expectation of this couple to have children and the unsuccessful outcome negatively affect their social image and psychology. Because they perceive the center and goal of their lives as having children, and this constantly causes stress and tension, other dysfunctions, and deterioration of family relationships ( Nagórska et al., 2023). All of these factors make it difficult to accept the diagnosis and lower self-esteem. Self-esteem is a person's positive or negative evaluation of themselves and their attitude towards themselves. This is inversely related to social adjustment, life activities and psychological state. However, self-esteem can change depending on the events that occur, and it was found that couples with infertility had lower self-esteem compared to other healthy couples. The level of disease acceptance varies depending on several factors, such as the patient's optimism, social support, the nature and social meaning of the disease, economic status, gender differences, etc. All these factors play an important role in the acceptance of the diagnosis. In this study, 51.5%

of women and 48.5% of men participated, and their average age was 33.85 years. Most of them reported living in the city and having higher education. As a result of the study, the majority of respondents had high levels of self-esteem and disease acceptance. There was little correlation between the age of the patients and the level of disease acceptance, but there was a positive correlation between age and self-esteem, as a result, age did not significantly affect the SES and AIS scores of women and men, patients with low education had lower self-esteem scores than those with high education, and education did not have a significant effect on the level of disease acceptance. Place of residence did not significantly differ between men and women in terms of SES and AIS scores. The effect of clinical factors (cause, duration, type of infertility) on SES and AIS scores was then examined. There was no significant difference between SES and AIS scores related to the duration of infertility, patients with secondary infertility had higher SES and AIS scores than those with primary infertility, and different causes of infertility did not significantly differ between men and women in terms of SES and AIS scores. Overall, the self-esteem score of the infertility group was lower than that of the healthy group. Self-esteem scores varied by gender, with infertile women having lower self-esteem scores than infertile men. Although infertility can be caused by several reasons, in many countries the main responsibility lies with the woman and is the focus of stigma, while men do not undergo the necessary tests related to infertility, which creates long and difficult problems, making women more stressed and insecure. There was a positive correlation between education level and self-esteem. Thus, accepting a diagnosis of infertility meant accepting not having children or adopting, and it was found that women wanted to have children more than men. Patients who accepted infertility more easily and had higher self-esteem had higher social support and financial status. ( Nagórska et al., 2023). Previously, the cause of infertility was seen only in women, but over time, science developed and through sperm analysis it was determined that 50% of infertility is observed in the male factor. In addition, it was claimed that the psychological impact of infertility only affects women, but studies show that men are psychologically affected by infertility, and in one study, out of 274 men undergoing infertility treatment, 32.1% suffered from depression and 60.6% from anxiety disorders. Unfortunately, these studies are not enough and this creates problems for early diagnosis, successful treatment, and psychological support for men with infertility problems. Experiencing stress for a long time causes psychological and medical disorders, for example, psychological tension can cause sexual dysfunction, hormonal problems. Studies show that men with high levels of depression and anxiety had lower testosterone levels and sperm quality, and higher levels of cortisol, the stress hormone. Although infertile men suffer from psychological problems due to infertility, coping methods and socio-psychological support were not available for them, and research on

this topic was very limited. Therefore, the main goal should be to provide men with infertility problems with an accessible coping method to reduce their psychological distress. In most societies, infertility is considered unacceptable and a social burden for a man, so he is reluctant to talk about infertility and has difficulty seeking professional help. Because infertility has a great impact on the male role (Domar et al., 2023). Research has found that men preferred anonymous online forms to seek support to cope with the problem of infertility. Because it was very difficult for men to share their feelings and talk about infertility with someone, the online and anonymous form was a safe and comfortable space for them. This method helped them feel more comfortable and reduce their anxiety. Accordingly, the accessible FertiStrong mobile application was developed to reduce the stress caused by infertility and provide psychological coping methods. A randomized controlled pilot study was conducted to determine whether this mobile application worked. The application developed cognitive-behavioral therapy coping techniques and relaxation techniques for 50 of the most stressful situations that men with infertility problems might face. There were 12 sections describing stressful situations, and each section had subsections corresponding to 4-6 situations, and a coping method was developed for each of these situations. The study was conducted over a short period of time and with 39 people, using a scale to determine anxiety and depression and a questionnaire to collect medical demographic data. There was no difference in the demographic data of the experimental group and the control group. The level of depression and anxiety of both groups was measured, then the intervention group used the mobile application, and the psychological state of the groups was measured again with the scales. As a result, despite the limitations of the study being conducted for 1 month and with a small number of participants, some differences emerged. The FertiStrong mobile application was able to help reduce the level of anxiety and depression in infertile men. On the contrary, there was no positive change in the control group and depression and anxiety increased slightly. Infertile men see fatherhood as the main goal of their lives, and this causes them to be constantly tense, of course, the role of social values and beliefs, expectations, family support and relationships is great here. It was found that it was more difficult to involve men in psychological support than women, and experts decided that the use of an online mobile application could be useful as an alternative solution (Domar et al., 2023). It has been determined that anxiety disorders are one of the most common mental disorders observed during infertility. This mental disorder is at a high level in all stages of infertility disorder. The observation of anxiety disorders in infertility problems is 2 times more common than in the general population. In this study, however, infertile men have more difficulty coping than infertile women. According to meta-analysis studies, anxiety disorders are considered the most common psychological disorder in the world and the level of this disorder is higher in

infertile men. The studies conducted, using the DASS-21 and Beck anxiety interval, revealed that the level of anxiety in infertile men varies from 34.9% to 7.08%. The prevalence of anxiety disorders in the general population is 4.05%. On average, the prevalence of anxiety disorders in infertile men is 21.37%. Since male fertility and masculinity are closely linked in most societies, infertile men suffer from guilt, inadequacy and self-esteem issues. The desire to have children, religious, personal and cultural values are the main factors influencing this situation. Thus, family conflicts, divorce, social isolation occur and lead to increased anxiety. According to studies, factors that cause increased anxiety levels in infertile men may include the unknown cause of infertility, unsuccessful treatment results, financial costs, social pressure and low education level. It has been found that infertile men, unlike infertile women, do not seek psychological help to manage their stress levels and have difficulty talking about their problems. This situation increases their stress levels. Therefore, social, psychological and family support is particularly important. It was also found that the level of stress related to infertility is higher in countries with lower economic status (Simbar et al., 2024). Over the years, the relationship between infertility and the male factor has been increasingly investigated. For example, the relationship between psychological health and sexual activity of men with primary and secondary infertility problems has been investigated. Here, the main issue is focused on the impact of infertility on sexual activity in men and the importance of psychological support in treatment. According to previous studies, male infertility is observed together with depression, anxiety, sexual dysfunction and other psychological problems. Social pressure and people's expectations have a worse effect on male psychology and cause stress. This stress factor can affect hormones and impair sexual function. Men with secondary infertility problems experience different emotions than men with primary infertility problems because they are fathers first. Identity disturbance has been observed in men with primary infertility problems. In a study related to this topic, 148 men with primary and 222 with secondary infertility problems were diagnosed. Several psychological scales were applied to assess the psychological state of these participants and statistical analysis was conducted. It was found that anxiety symptoms are more severe in men suffering from primary infertility and they have psychological adaptation problems. Men with secondary infertility have more erectile dysfunction and lower sexual satisfaction. As a result, the types of infertility have different effects on men's psychological and sexual activity (Ma et al., 2021). Numerous studies have been conducted to investigate the impact of male infertility on emotional state and levels of depression and anxiety in infertile men, including 8 case-control studies, 14 prospective studies, and 1 data linkage study. According to the results, a positive association with depression was found in men with infertility problems. Infertile men had higher depressive symptoms than the

healthy group. This result was determined to have a negative impact on the life activities of infertile men, family relationships, social, professional, and educational life. Anxiety disorders are also identified as comorbid in infertility problems. The level of anxiety was observed to be higher in infertile men, and this level of anxiety was more related to social and cultural pressures. The problem of infertility acts as a major factor in low self-esteem in men, as the infertile man perceives himself as inadequate and useless. Along with this way of thinking, deterioration of quality of life, social and family relationships was observed. The stress factor associated with infertility was found to affect the psychological state, treatment outcome and family relationships in men, making this process even more difficult. Based on these results, it is once again clear that male infertility is a serious disorder with medical, social, and psychological effects, and the impact of infertility on male psychology can lead to different consequences. This situation varies depending on the values created by society and society, the role of the family, and the role of men in society (Biggs et al., 2024). People with infertility problems may have several comorbid mental disorders. One of the most common anxiety disorders in infertility is generalized anxiety disorder (GAD). The prevalence of GAD in infertile patients and its relationship to social, psychological, and medical factors were investigated. In a study conducted in Tehran, the GAD-7 scale and other questionnaires were administered to 1,146 infertile patients. According to the results, GAD was observed in 28.3% of the study participants, and GAD was more common in women. The risk of GAD was higher in people with a low level of education, and the risk of GAD increased as the duration of infertility increased. It was also found that family or social support had a significant impact on the risk of GAD. These results once again prove the psychological aspects of infertility. It is clear that the meaning given to having children, social pressures, social expectations and family conflicts, lack of social and psychological support, and failure of medical treatment can lead to increased stress levels and comorbid disorders in infertile people (Omani-Samani et al., 2018). Depression and anxiety disorders and related factors are important factors for the outcome of medical treatment in men suffering from infertility problems. In this regard, a study was conducted with infertile men in Tunisia. It was found that anxiety symptoms were more common in infertile men with several comorbid disorders. Also, the increasing duration of infertility and comorbid disorders, such as pathologies in the genitourinary system, and other medical conditions are considered factors that increase the level of depression. A relationship between varicocele and infertility was also established. Varicocele is observed in 15% of adolescents aged 15-19. Varicocele is observed as a comorbidity in primary infertility in 35-44%, and in secondary infertility in 45-81%. In the study, sperm quality was normal in 8% of 282 patients. Accordingly, there was a relationship between infertility, sperm quality,

psychological stress and other medical conditions. According to studies, neuroendocrine factors can affect pathologies in the spermatogenesis process. Excess stress can affect the hypothalamic-pituitary-gonadal axis, reducing testosterone levels. Testosterone is considered the main factor affecting sperm quality. It was observed that sperm quality was lower in men suffering from depression. It was found that during hypospermia, men had more anxiety than in the healthy group. According to a study conducted in Tunisia, depression and anxiety disorders were observed at moderate levels in infertile men (Kooli et al., 2023). Infertility is mainly observed in 15% of couples and 50% is related to the male factor. Traditionally, the male role is associated with power and fertility. This way of thinking can cause a serious psychological crisis for a man suffering from a diagnosis of infertility. Thus, the relationship between infertility and male self-image, psychosocial effects, men's internal struggles and societal influences have been investigated in several studies, and the study participants were from different continents. According to qualitative studies, it was determined that men diagnosed with infertility begin to question their male self-image. They believe that their male role is also impaired by the disruption of their reproductive functions. The feeling of not being able to be a father and being inadequate leads to low self-esteem. Men who receive this diagnosis may experience feelings of shame, guilt, social isolation, depression and anxiety symptoms, tension in social relationships, and avoidance of sexual intercourse. One of the factors that causes the stigmatization of male infertility may be related to gender roles. Also, social pressure from acquaintances regarding the importance of fatherhood may increase the stress of infertility. It was determined that infertile men do not receive this support, even though they know that psychological help is useful. Because they have the idea that “a man should solve his problem himself”. The main reason for all these ideas may be related to the approach to the male role in patriarchal culture. Because excessive expectations and idealization of men cause a man diagnosed with infertility to experience a severe psychological crisis. Preventing excessive idealization of the male factor in patriarchal culture is not a threat to masculinity. It may be necessary to prevent these false beliefs (Pakpahan et al., 2023). Male infertility can occur due to various abnormalities of the sperm or due to genetic mutations, lifestyle, medical diseases. Some treatment methods can be used in infertility, such as in vitro fertilization, insemination with donor sperm and intracytoplasmic sperm injection (ICSI) method. The psychosocial impact of this method on men has been studied. It is clear that this method creates stress in men, because in case of deficiency in the sperm sample, they have to undergo invasive and complex procedures such as Testicular Sperm Extraction (TESE). In previous studies, women were more psychologically affected by infertility, but according to new studies, psychological stress and difficulties in their social life are also observed in men. Since male

factor infertility is associated with higher levels of stress and lower quality of life than other causes of infertility, a cohort study found that infertile men experienced sexual dysfunction. In general, there was a lack of qualitative research on the psychological aspects of male infertility. This study investigated the psychosocial impact of ICSI treatment on infertile men. This may help them to better understand and reduce their anxiety and stress related to infertility. The study was conducted on 19 infertile men in the Netherlands who had received or were undergoing ICSI treatment. Socio-demographic data were obtained through individual and face-to-face interviews. It turns out that infertile men carry this problem as a burden in other spheres of their lives ( De Vries et al., 2024). There were 5 main reasons why infertile men receiving ICSI treatment experienced psychological stress, and these reasons were investigated. 1. Different worldviews, Some infertile men accept the situation and look for a solution, while others cannot accept it, and experience difficulties in society and when facing children. 2. Mixed emotions, Men who hear the diagnosis of infertility are shocked and think that their family relationships will be disrupted, their role as men in society will decrease, and they experience various emotions (sadness, anger, shame). When men hear about ICSI treatment, they feel hopeful, but when they realize that the main procedures in this treatment will be performed by the woman, that is, their partner, the positive emotions are replaced by guilt and inadequacy. Because they say, “The problem is mine, but my partner will suffer.” This thought increases stress and guilt, and they feel pressured when providing a sperm sample, because they think that this is the only job they have. This thought increases their anxiety and they think, “Will I be able to provide a sufficient sperm sample at that moment?” . The 3rd issue was to seek support. Men who thought that their partner was to blame for all the suffering tried to contribute to their partner by being more attentive and making sacrifices in the relationship, and also focusing on a healthy lifestyle for a good sperm sample and sometimes making unnecessary sacrifices in the relationship. They found comfort by compensating for what they could not do with these behaviors. Some men accepted this situation and behaved adequately. The 4th issue was the change in relationships. During treatment, the relationship of couples changed in both positive and negative ways. Some couples accepted the problem as a common problem and fought as a unit or family, and while overcoming difficulties, they got to know each other better and their love increased. In some couples, they blamed each other for the problems they faced during treatment and became more aggressive, thus thinking about leaving, because they knew that the woman could have a child more easily with another male factor. Also, because sexual intercourse was planned according to the treatment, men saw sexual intercourse as a forced act. This led to a decrease in romance and emotions in them, and they noted that sexual intercourse was meaningless in the post-ovulatory period, so for them, sex was just a means to have a child. The 5th issue was sharing

this topic. Different results emerged in this study. While some men were comfortable sharing this diagnosis and problem with family and friends, some men shared this issue with very few people. They were ashamed of their diagnosis and thought that they were inadequate. This was due to social values and differences, and the way they were raised. When they learned that other men also suffer from this problem, they realized that they were not alone and felt a little better. As a result, infertile men undergoing ICSI treatment feel excluded from the process and suffer psychosocial distress. The health system should take this into account and create a basis for the role of these men in the treatment process ( De Vries et al., 2024). Infertile couples experience severe depression and stress, both due to their own expectations and the expectations and endless questions of other people. This can cause them to experience problems related to family relationships, family compatibility and the image of women or men. This study was conducted in China, and in this country, social pressure to not have children creates psychological stress. This study examined the factors associated with infertility-related stress. There was a relationship between infertility-related stress and family factors, and it was determined that stress interacted with age, gender, employment status, economic status, and education level. Demographic data were collected to investigate this relationship. It has also been found that strong family cohesion and unity prevent stress levels and depression in several diseases. The main aim here was to measure infertility-related stress and family cohesion, couple cohesion and to determine the relationship between them. In this study 506 couples participated in the study. The results of the analysis showed that the level of stress related to infertility was different in men and women, women were more exposed to stress, and social influences, parenting needs, and sexual concerns increased this stress. Women scored higher on the assessment of family unity. Fertility Problem Inventory (FPI) . Several statistical methods were used to determine the Fertility Problem Inventory (FPI) scores of demographic data. Urban men and women had lower FPI scores than rural men, and men and women with lower levels of education had higher FPI scores. When looking at the multivariate linear regression analysis of infertility-related stress in infertile couples, family unity and education level were negatively associated with stress in men. According to the study, women are more stressed in the problem of infertility, in each society or in countries with different value systems, infertility is viewed from a different perspective and this has a clear impact on life activities, family relationships, social status, psychological state, sexual life, female and male identity, and the course of medical intervention (Lei et al., 2021). One-way ANOVA determined that stress was higher in infertile couples living in rural areas, which was due to the lack of sufficient health resources in the village and insufficient information or misconceptions about infertility. This causes these people to have many negative experiences related to infertility and experience more stress or

delay treatment. Therefore, educational measures should be taken in the village and health resources should be provided, and psychological support should be provided. Also, since the stress of couples with low education levels is higher, they may have difficulty finding the right treatment path or may be indifferent, these couples should be given detailed psychoeducation to prevent this. As a result, family unity, family adjustment, education level, and economic status were negatively related to infertility-related stress (Lei et al., 2021). The male factor of infertility has been little studied worldwide, which has also led to the lack of understanding of the emotional effects and support issues in these men. This study emphasizes the importance of adequate information and emotional support, taking into account the psychological state of men in the problem of male factor infertility. Since women are mainly involved in the treatment process of infertility and pregnancy-related disorders, infertility has been perceived as a female problem, and the female factor of infertility and its psychological effects have been studied more. However, the psychological state of men and their need for support in the problem of infertility was not taken into account, this problem was a single issue for the couple, and both women and men experienced anxiety, worry, depression, and hopelessness. However, men hid their emotions and tried to support their partner and stay strong, and tried to deal with the psychological aspects of infertility secretly and without support. Male factor infertility was an even more stigmatized topic. Because men equate their fertility, having children, and being a father with the role of masculinity. This has a negative impact on social difficulties and self-esteem. Therefore, psychological support is very important for both sexes. The methods of dealing with infertility are different for women and men. Unfortunately, psychotherapy is not provided for both parties in all spheres of the healthcare system, which makes the situation even more difficult. The main goal of this study was to investigate what information and support men want to receive during treatment. The study was conducted in Australia between April and November 2022 and was designed with a mixed methods approach. Several questionnaires were used and interviews were conducted. It was found that men obtained information about infertility and psychological support from their doctors or online resources. Some reported receiving their main support from family, partners or friends, but they reported that their psychosocial support or help needs were not fully met. They were reluctant to seek psychological help due to the social values of Australian society, believing that giving out personal information could be harmful to them. Infertile men who identified with masculinity as fathers suffered in family relationships and the social sphere. They noted that this diagnosis was embarrassing for them, and therefore they were reluctant to talk about this topic with others, seek psychological help, and isolate themselves from society. (Obst et al., 2023). A similar study was also conducted on the relationship between marital well-being and depressive

symptoms in couples with infertility problems. The results of the analysis revealed that marital well-being of both partners affected their depression, with men's marital well-being significantly associated with women's depressive symptoms, but women's marital well-being was not associated with men's depressive symptoms (Maroufizadeh et al., 2018). The researchers investigated the relationship between quality of life and depression in infertile couples. This study was conducted among infertile couples in Iran, and all couples gave their consent for the study. As a result, it was determined that there was a significant difference between the depression levels of men and women, with women's depression being more severe. Also, the quality of life levels were different in men and women, with this factor being lower in women. There was a reciprocal relationship between the depression level of the infertile person and the quality of life level. The depression level of infertile women was also affected by their partner, although this relationship was not as strong in men, there was a reciprocal effect. Therefore, infertile couples should join treatment together and support each other (Maroufizadeh et al., 2018). The duration of infertility has a significant impact on male sexual function and psychological state. Thus, increasing the duration of infertility affects the normal functioning of sexual desire, orgasm, erectile and ejaculation functions, causing disorders. According to the results, it was found that the duration of infertility is an independent risk factor for sexual dysfunctions, but although the duration of infertility has an effect on psychological disorders, it is not an independent risk factor. According to many studies, erectile dysfunction (ED) is common in men with infertility problems. For example, in one study, 1 in 6 infertile men had ED, and in a study conducted in China, 57.8% of 4299 infertile men had ED. The increase in the duration of infertility further increases the risk of ED and premature ejaculation. Premature ejaculation was observed in 12-15% of infertile men. Several factors can affect premature ejaculation, such as smoking, stress, depression, etc. As a result of the study, there is a significant relationship between psychological disorders and sexual dysfunction. Thus, GAD-7 and PHQ-9 scores were higher in infertile men (Dong et al., 2022). Psychological and sexual dysfunctions have been observed in couples during the treatment of infertility problems. Since infertility is a psychosocial burden in some societies, couples experience anxiety and thoughts about the possibility of negative outcomes of treatment during treatment, which leads to Infertosex Syndrome. It is clear that there is a close relationship between infertility and sexual activity. In 1978, the first successful birth with artificial insemination occurred and this treatment method became popular, but this long-term treatment can be a stress factor that can affect the couple's family well-being, quality of life, and sex life. The problem of infertility itself is a stress factor for couples. These couples grow up in different societies with different belief and value systems, and since infertility is stigmatized, self-esteem problems, family conflicts, and

other sexual and psychological dysfunctions can arise in both women and men. 83% of infertile couples are worried about social pressure, high costs, and an unsuccessful outcome, as well as complexes in women and men, thoughts about the violation of their female or male identity, and the fear of not being able to continue their offspring. Thus, depression, anxiety increase and problems arise in the sexual activity of couples. Although infertility and sexuality are separate fields, a gynecologist, andrologist, and psychotherapist should work as a team and treatment should be applied in a couple-centered parallel manner. Since infertility also causes communication, sexual life, and sexual disorders in the relationship between husband and wife, specialists should also pay attention to sexual dysfunctions in the diagnosis of couples. Because even though these couples apply for infertility, they do not talk about their sex life or sexual problems. This is because in some value systems, the social model views parenthood and sexuality as taboo, couples do not talk about it with each other or with doctors, thus experiencing more stress, which can make all stages of their sexual activity (desire, arousal, orgasm) of poor quality. Couples may approach infertility and sexuality differently depending on their cultural background. The reason for this is cultural differences, as sexuality is taboo in some societies, so couples do not discuss the problem and it creates difficulties in identifying the disorder. The most important problem is the lack of communication between couples, and in this case, women experience a decrease in sexual desire and arousal, and orgasm problems develop over time. The impact of infertility on male psychology and sexual activity was also investigated. It is clear that infertility is also considered a social burden for men, and psychological stress leads to male sexual dysfunctions, a decrease in quality of life, and this stress negatively affects sexual activity and arousal, creating a number of problems. Erectile dysfunction has been observed in men with infertility problems, which leads to failure of sexual intercourse, emotional tension and disruption of family relationships. The first evidence was that in 1980, 11 out of 16 infertile couples experienced erectile dysfunction. Over the years, this percentage has increased. In 2015, 8.9% of 236 infertile couples in Korea and 52.7% of 4,220 infertile couples in Japan experienced erectile dysfunction. These couples had impaired sexual function and were at risk of infertility (Luca et al., 2021). Another study found that infertility in men led to decreased sexual satisfaction. Infertility also triggers premature ejaculation. The Premature Ejaculation Diagnostic Tool (PEDT) was used to conduct this study and found this problem in 12.9% of infertile men. Premature ejaculation and erectile dysfunction are disorders that develop each other, so the examination of men with infertility problems should examine both the psychological state and sexual dysfunction. It is clear that infertility is perceived as a burden on sexual life and creates a paradigm of sexual dysfunction. Because the main goal of sexual activity in infertility treatment is to give birth to a child, and in this case, sexual activity

is always planned in advance, as if it were a compulsion or a daily routine. This has a clear impact on the couple's family relationship, sexual life and desire, and psychological state. It was determined that infertility contributed to a decrease in orgasm and satisfaction in 62% of women, erectile dysfunction in 52.5% of men, and premature ejaculation in 23.5%. Also, in infertile couples, men worry about their potency weakening, because since sexual intercourse is always planned and perceived as a compulsion, they feel pressure on the man, and as stress increases, male sexual dysfunctions and psychological tension can develop. Studies have shown that sperm quality decreases due to stress in infertility treatment. Reducing stress in men and improving sperm quality are the main goals of infertility treatment. According to Japanese studies, couples receiving ART treatment have decreased sexual interest after treatment because the planned and mandatory nature of sexual intercourse according to the treatment schedule, the importance of frequency and being under control, and the social influence of people have led to the loss of the beautiful aspects of sexual activity and a decrease in libido and avoidance behaviors in men. The ART method also affects the frequency of sexual intercourse, and men feel more pressure at this time. They have difficulty accepting the ART method because they identify the image of masculinity with the ability to have children and perceive this treatment method as an interference with their masculinity, thus creating psychological tension. Some Italian and Japanese studies have found that 56.2% of men using the ART method have erectile dysfunction, 25% have premature ejaculation and other sexual dysfunctions. This was due to the demands of ART treatment and the woman's demands on the man. There was a strong relationship between social and psychological burden and erectile dysfunction. Therefore, family therapies, cognitive behavioral therapy, psychoanalysis and psychosexual therapies, and meditation can be implemented. In these therapies, it is important to work on false beliefs and thoughts. Sexual and psychological examination of infertile couples also determines pharmacological intervention. For example, after examining the medical or psychological causes of erectile dysfunction, a treatment plan is prepared. As a result, infertility can cause sexual dysfunction and disruption of life activities, and in infertile couples, erectile dysfunction, premature ejaculation, lack of sexual interest, orgasm and vaginismus problems are interconnected with the psychological state. However, the relationship between infertility and sexual dysfunction cannot be stated precisely because studies conducted in different countries give different results, this is because these countries have different values and social norms. However, in each case, medical intervention and psychological intervention should be carried out in parallel, and the couple should be approached as a unit in infertility treatment (Luca et al., 2021). Infertility has an impact on sexual life in men and women, in addition to its medical and psychosocial effects. Thus, the relationship between infertility and attachment style and

sexual activity has been determined. The effect of attachment style on sexual anxiety and sexual internal control in infertile women and men was studied. According to the results, high avoidant attachment increases sexual internal control in infertile men, but no relationship was observed between attachment style and sexual anxiety. Also, in infertile women, anxious attachment reduces sexual internal control, while avoidant attachment reduces sexual anxiety (Santona et al., 2023). The psychological impact of infertility on couples is significant, and one study examined the importance of psychological counseling intervention on the satisfaction of the marital and sexual lives of infertile couples. The diagnosis of infertility, long-term treatment and negative consequences, and failure cause psychological stress. Thus, problems arise in family and sexual relationships, often the problem of infertility describes the main goal of sexual function as having a child, and couples focus on one thing in their sexual relationship, cannot enjoy it, perceive it as a compulsion and distance themselves from each other. Social and family influences increase the level of stress. Therefore, psychological help is very important in the problem of infertility. Because infertility can also bring other problems with it (stress, anxiety, self-esteem problems, depression). These psychological methods can be useful in infertile couples: sychoanalytic therapy, cognitive-behavioral therapy, strategic psychotherapy, marriage preparation programs, acceptance, problem-solving techniques, relaxation exercises, couples therapy, sex therapy, education about infertility and sexual function. The results of the meta-analysis showed that infertile couples who received psychotherapy had 2.5 times better marital satisfaction and 1.5 times better sexual satisfaction than those who did not receive it. The main reason for the successful outcome is that psychotherapy techniques change the couples' misconceptions through psychological techniques, education, and improve family ties. (Alirezaei et al., 2022). The effect of an interactive educational platform on the level of awareness and anxiety of patients undergoing infertility treatment was investigated. The problem of infertility is a difficult and stressful situation for every patient, in which case it is very important for the patient to know all the processes before medical intervention. Over time, medicine has developed and become more complex, and obtaining informed consent has become more difficult, because infertility treatment consists of complex processes and these processes are difficult for patients to understand. The multimedia educational platform is designed to address this problem. Sometimes standard advice is not enough for patients to fully understand, with the multimedia platform the patient understands the treatment process in more detail and clearly. To prove this hypothesis, a study was conducted and 2 different groups were examined. Those who received standard advice in infertility treatment and those who used the multimedia platform, it was found that those who used the multimedia platform were more confident and informed, but

there was no difference in the level of anxiety between the 2 groups. As a result, multimedia educational resources do not reduce or increase anxiety in infertility treatment. Through informed consent, the patient is educated about the benefits, harms and risks of the operation or treatment, and psychological consultation should be conducted with the patient if necessary. This method allows patients to make independent decisions, and when making this decision, patients want to fully understand all the processes, and the multimedia educational platform and doctor consultation facilitate this process ( Bernard et al., 2022). Patient satisfaction with the services of nurses for patients suffering from infertility was investigated through a questionnaire survey. Infertility is considered a reproductive disorder in women and men. Since this disorder has both medical and psychosocial effects, it can cause stress and other psychological problems in the patient, and the initial diagnostic assessment and consultation are difficult and sensitive processes for patients, therefore, the services of nurses to the patient during this process are important. High levels of patient satisfaction have a significant impact on the sustainability and positive outcome of treatment. Since infertility has a long-term and devastating psychological impact on couples, nurses should take this into account and provide couples with accurate, clear information about infertility and treatment, and take psychological status into account during the initial consultation. Nurses should be aware of the complexity of infertility and modern treatment options, which will help them provide appropriate care to patients. In order to achieve higher patient satisfaction, nurses should be trained in infertility, patient psychology, and appropriate approaches. This study highlights the importance of nurses in managing treatment, given the complexities of infertility disorders. They should be able to develop an individualized care plan, and studies have shown that women who receive ongoing counseling and participate in nurse-led support groups are more likely to have a successful outcome than those who do not. Nurses have special functions in infertility treatment, they must educate patients during the treatment process, provide the necessary care and emotional support, prepare an individual care plan and cooperate with psychologists (Wang et al., 2024). In men with infertility problems, family function has a significant positive effect on psychological well-being. Here, social support and self-efficacy are also considered to be the main factors affecting the psychological state. According to studies, there is a relationship between family function, social support and self-efficacy and the level of anxiety disorder in infertile men. Thus, in one study, symptoms of anxiety disorder were observed in 137 out of 202 infertile men. It was determined that infertile men with higher family function, social support and self-efficacy had lower anxiety levels. In general, infertility problems and psychological disorders can exacerbate the medical and psychological condition related to infertility by stimulating each other. Therefore, it is important to provide psychological support during infertility problems in the health system and to develop

these 3 factors among patients and their families. As a result, these factors can help prevent anxiety disorders and other psychological difficulties in infertile couples (Hu et al., 2024). It is clear that infertility causes several psychological conditions, such as intra-family conflicts and increased stress levels. When examining the impact of infertility on family relationships, the topic of domestic violence emerged. A study was conducted in Jordan to examine the impact of attitudes towards infertility on violence. According to the results, infertility caused psychological stress between couples and social pressure on women. In families with infertility problems, it was observed that infertile women were mainly subjected to physical and psychological violence by family members and spouses. This behavior is related to the meaning attached to infertility in Jordan. Cognitive behavioral therapy techniques may be useful for correct communication and coping methods between couples to reduce violence in infertile families. Implementing related programs for both women and men may be more beneficial for reducing violence and psychological well-being (Hall-Clifford et al., 2025).

# CHAPTER II. METHODS AND METHODOLOGY

## 2.1. Organization and conduct of the research work

Permission for the research was obtained from the Ethics Committee according to the 2024/2025-2 protocol of Khazar University. The research was conducted at the Baku AMU Teaching Surgery Clinic from September 1, 2024. 50 men with infertility problems participated in the study. The age range varied between 26-50, (m=36.7). The research model of the study was related to the analysis of the situation. The main goal is to study the levels of anxiety and excitement in men with infertility problems, their relationship with other psychological and demographic factors. Before conducting the research work, the participants were informed about the anonymity of the study and their consent to voluntary participation in the study was obtained.

## 2.2. Methods used

The following methods can be used with the study participants to achieve the research objective:

- Demographic-information questionnaire

- DASS 21 (Depression, Anxiety and Stress Scale 21)

- Zung's Self-Assessment Anxiety Scale

Information questionnaire: In the study, an 18-item information questionnaire (age, marital status, employment level, financial situation, duration of infertility, education level, place of residence, family support and pressure, etc.) prepared by us was applied to collect important demographic information in men with infertility problems (appendix-1). DASS 21 (Depression, Anxiety and Stress Scale 21): The DASS-21 scale was developed by Syd Lovibond and Peter Lovibond in 1995. There is no adaptation of this scale to the Azerbaijani language. The DASS-21 scale, consisting of 21 questions, each with 7 questions, was used to determine depression, anxiety, and stress factors in men with infertility problems. The answers to the questions are Likert-type options (never, sometimes, often, always). To calculate the result, the points (0, 1, 2, 3) recorded by the participant in front of the statements related to the 3 psychological disorders listed separately should be summed (Appendix-2).

Number of statements related to depression: 3, 5, 10, 13, 16, 17, 21

Number of statements related to anxiety: 2, 4, 7, 9, 15, 19, 20

Number of statements related to stress: 1, 6, 8, 11, 12, 14, 18

Zung's Self-Rating Anxiety Scale: This scale was developed by Dr. William W.K Zung in 1971 and has not been adapted to Azerbaijani. Zung's Self-Rating Anxiety Scale was used to determine the level of anxiety in infertile men. This method can be used to determine the psychological and somatic symptoms of anxiety and the level of anxiety. This method consists of 20 questions and 4 Likert-type responses (rarely, occasionally, often, always). When calculating the ZUNG'S SELF-ASSESSMENT ANXIETY SCALE scores, the responses recorded by the participant should be summed (Appendix-3).

20-44 Normal anxiety disorder

45-59 Mild anxiety disorder

60-75 Soderate anxiety disorder

75-80 Severe anxiety disorder.

Qualitative and quantitative analysis of demographic data and scales collected as a result of the study was conducted. Statistical relationships of each result were determined using the SPSS-16 program. The study results were illustrated with tables or figures. In order to determine the statistical significance of the study results and the strength and direction of these relationships, Pearson and Sperman’s correlation analyses were applied, the mean scores of the variables were determined using Descriptive Statistics, and the statistically significant differences between certain groups were determined using Two-Way ANOVA analysis and Tukey test. The statistical significance of the results was determined based on the $p<0.05$ level. The significant relationship between some demographic data (age, marital status, employment level, financial status, duration of infertility, education level, place of residence, family support and pressure, etc.) and infertility-related stress, anxiety disorders, and other psychological factors in men suffering from infertility problems was investigated through the statistical analyses listed above.

## CHAPTER III. THE STATISTICAL ANALYSIS OF RESEARCH DATA

### 3.1. Analysis of Descriptive Statistics Results

The infertile men were first given a demographic questionnaire. According to the results, 50 men with infertility problems participated in the study. The age range varied between 26-50. The average age of the infertile men in the study was 36.7 (Figure 3.1.1.).


**Figure 3.1.1. Average age of infertile men**

According to the overall results of the DASS-21 and ZUNG psychological scales of the study participants, the average result of the DASS-21 scale is 19.52 points. The average result of the ZUNG scale is 34.88 points for all participants (Table 3.1.1.).

**Table 3.1.1. Descriptive Statistics for age, DASS-21 scale, ZUNG scale**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| age | 50 | 26 | 50 | 36.70 | 6.958 |
| DASS_21_scale | 50 | 8.00 | 26.00 | 19.5200 | 5.33085 |
| ZUNG_scale | 50 | 20.00 | 45.00 | 34.8800 | 9.02523 |
| Valid N (listwise) | 50 | | | | |

Infertile men with a duration of infertility of 1 year constitute 10% or 5 people, those with a duration of infertility of 2-5 years constitute 70% (35 people), and those with a duration of infertility of 5-10 years constitute 20% (10 people). (Figure 3.1.2.).

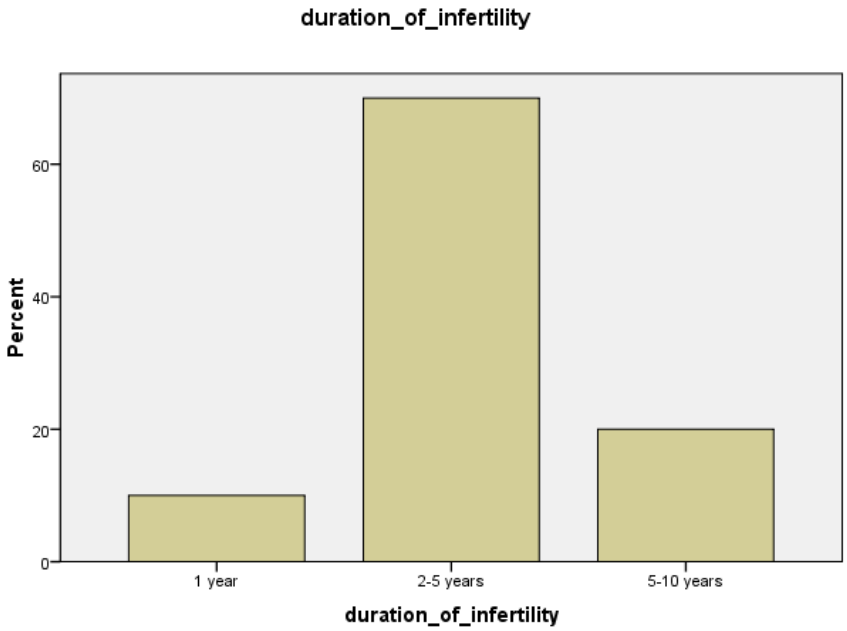


**Figure 3.1.2. Average duration of infertility**

It was determined that 35 (70%) of the men suffering from infertility problems in the study lived in the district, and 15 (30%) lived in the city (Figure 3.1.3.). 90% of the infertile men in the study (45 participants) had a professional occupation, while 10%, i.e. 5 participants, were unemployed (Figure 3.1.4.).

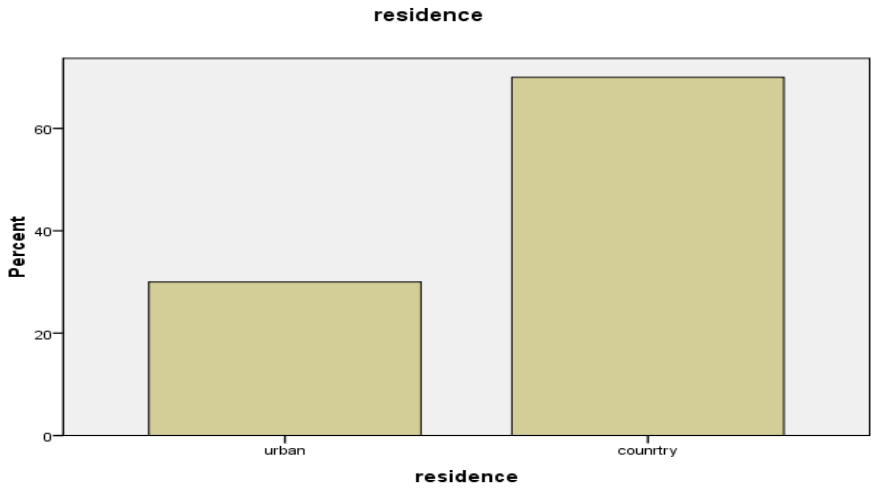


**Figure 3.1.3. Average residence of infertile men**


**Figure 3.1.4. Average occupation of infertile men**

Thirty-five of the participants had a university degree, nine had a college degree, and six had a high school degree (Figure 3.1.5.). Also, 40 of the study participants were married (80%) and 10 (20%) were divorced (Figure 3.1.6.).

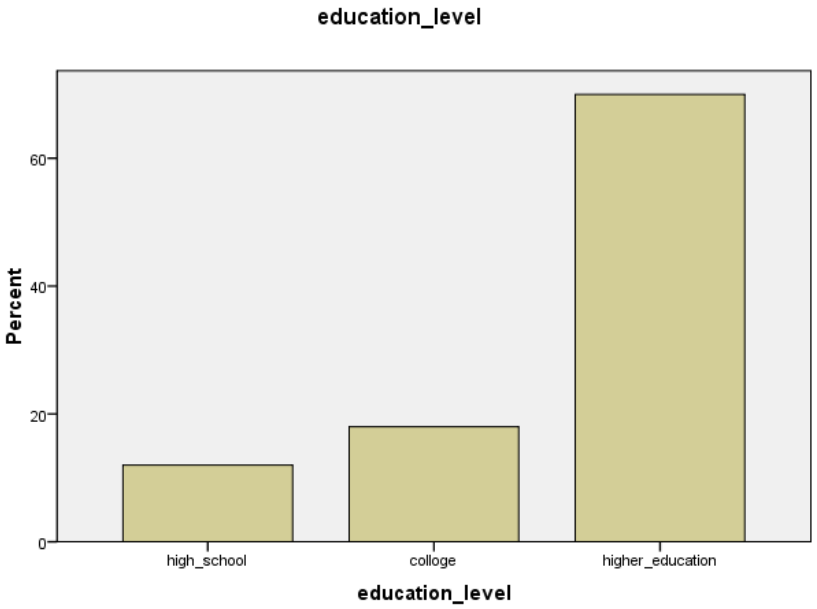


**Figure 3.1.5. Average educational level of infertile men**

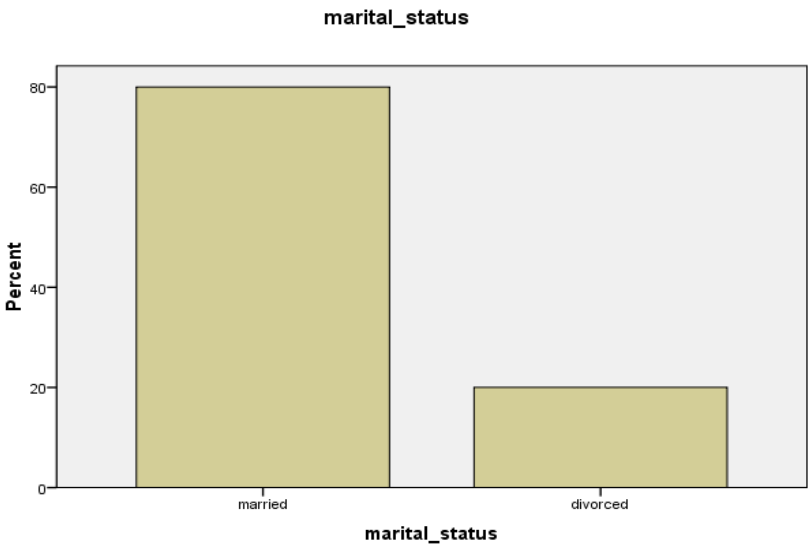


**Figure 3.1.6. Average marital status of infertile men**

The study found that 26 participants (52%) had a monthly income of less than 500, 12 (24%) had an income between 500 and 1000, 9 (18%) had an income between 1000 and 2000, and 3 (6%) had an income above 2000 (Figure 3.1.7.). Out of 50 participants, 38 (76%) had a high level of parental need, while 12 participants (24%) had a moderate level of parental need (Figure 3.1.8.).

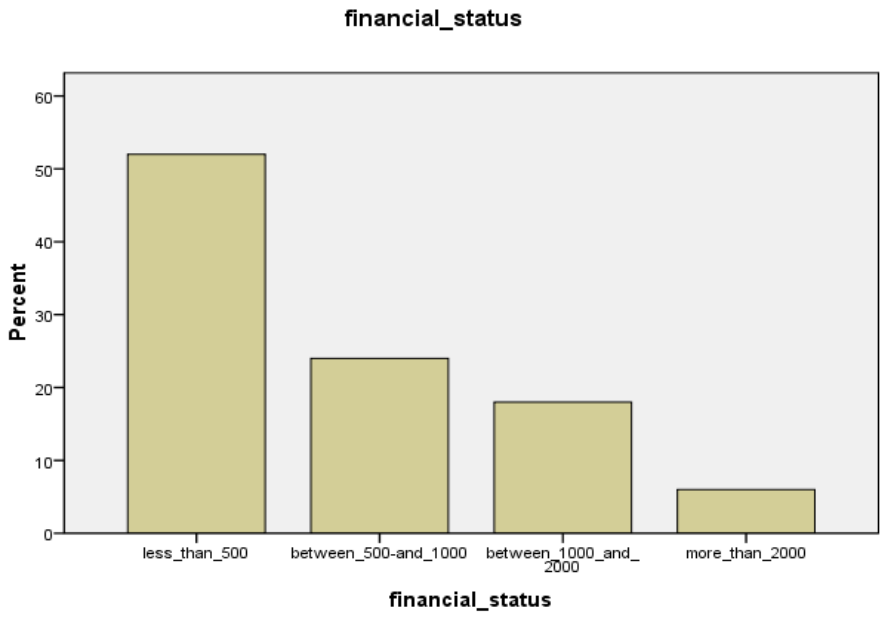


**Figure 3.1.7. Average financial status of infertile men**

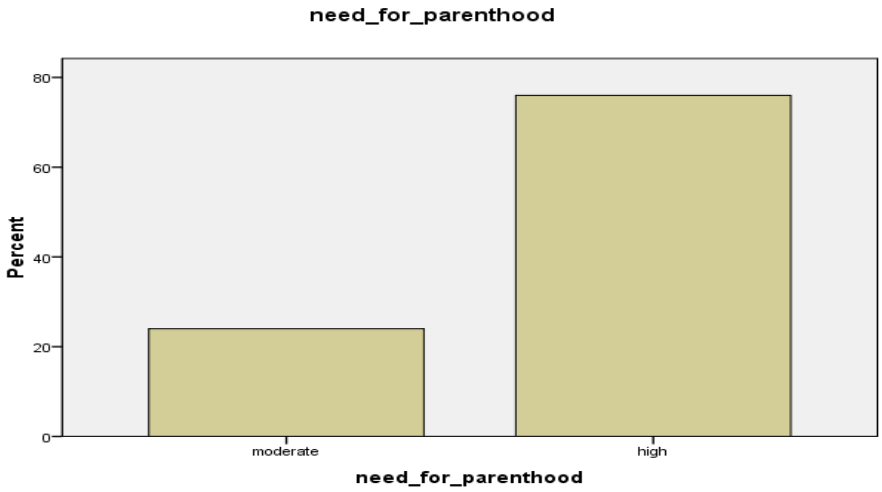


**Figure 3.1.8. Average need for parenthood of infertile men**

According to the statistical results, 50% (25 people) of the study participants had low family pressure, 20% (10 people) had medium pressure, and 30% (15 people) had high pressure (Figure 3.1.9.). Also, 50% (25 people) of the participants had high family support, 10% (5 people) had medium family support, and 40% (20 people) had low family support (Figure 3.1.10.)

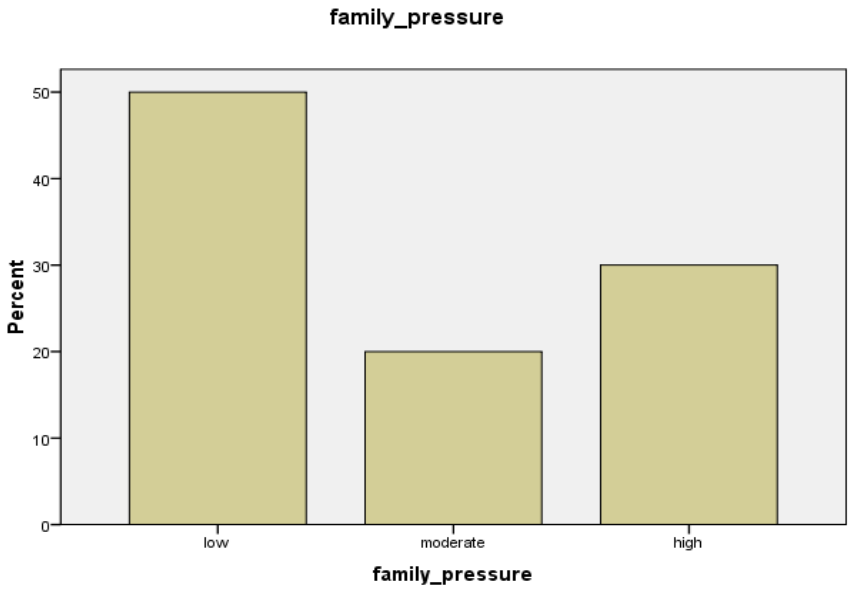


**Figure 3.1.9. Average family pressure of infertile men**

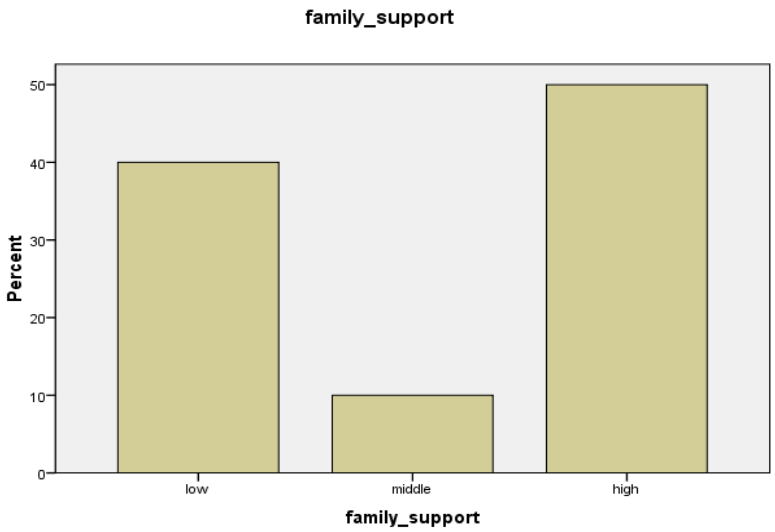


**Figure 3.1.10. Average family support of infertile men**

According to the results of the statistical analysis related to social anxiety in men with infertility problems, social anxiety was determined to be high in 60% (30 people), moderate in 20% (10 people), and low in 20% (10 people) of the study participants (Figure 3.1.11.). 60% (30 people) of the study participants reported that their stress related to infertility was high, 30% (15 people) reported that it was moderate, and 10% (5 people) reported that it was low (Figure 3.1.12.)

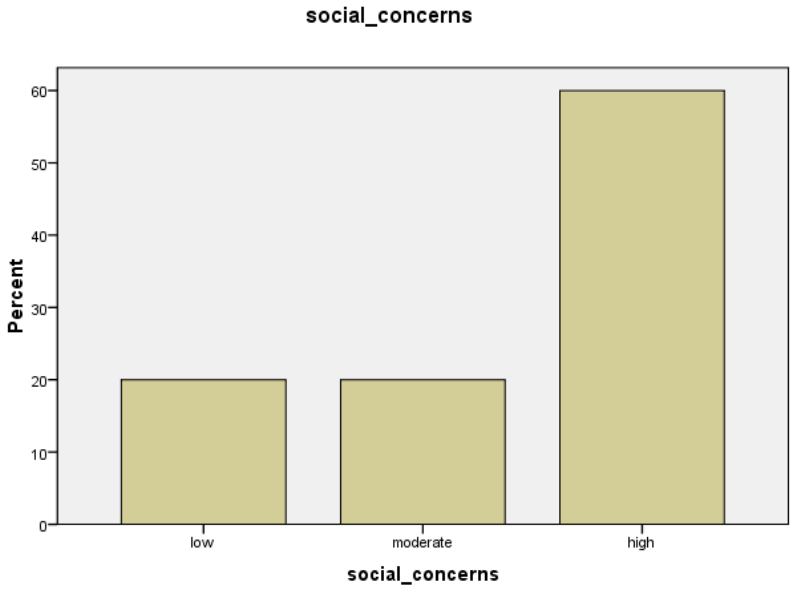


**Figure 3.1.11. Average social concerns of infertile men**

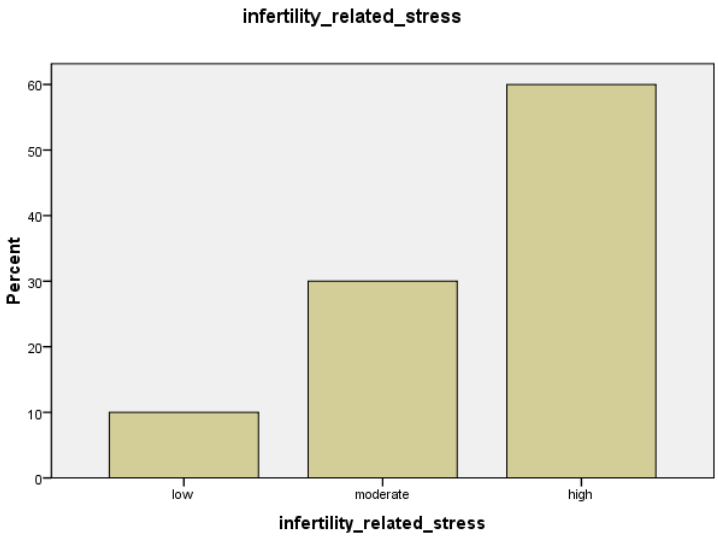


**Figure 3.1.12. Average infertility related stress of infertile men**

### 3.2. Analysis of Two-Way ANOVA Results

According to the Two-Way ANOVA analysis, financial status has a statistically significant effect on DASS-21 scores, $p< 0.05$, ($p=0.000$). That is, the DASS-21 scores (depression, stress, anxiety) of participants with different levels of financial status are different from each other. It was found that the level of family pressure significantly affected DASS-21 scores ($p=0.013$). Family pressure and financial status, separately and together, significantly affected the DASS-21 scores of the study participants ($p=0.036$) (Table 3.2.1.). This result is illustrated in Figure 3.2.1.

**Table 3.2.1. Tests of Between-Subjects Effects for Comparison of Financial Status and Family Pressure Groups Based on DASS-21 Scale Scores**

**Dependent v: DASS_21_scale**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Corrected Model | 927.056[a] | 6 | 154.509 | 14.275 | .000 | .666 |
| Intercept | 8593.842 | 1 | 8593.842 | 793.976 | .000 | .949 |
| financial_status | 306.732 | 3 | 102.244 | 9.446 | .000 | .397 |
| family_pressure | 104.023 | 2 | 52.012 | 4.805 | .013 | .183 |
| financial_status * family_pressure | 50.757 | 1 | 50.757 | 4.689 | .036 | .098 |
| Error | 465.424 | 43 | 10.824 | | | |
| Total | 20444.000 | 50 | | | | |
| Corrected Total | 1392.480 | 49 | | | | |

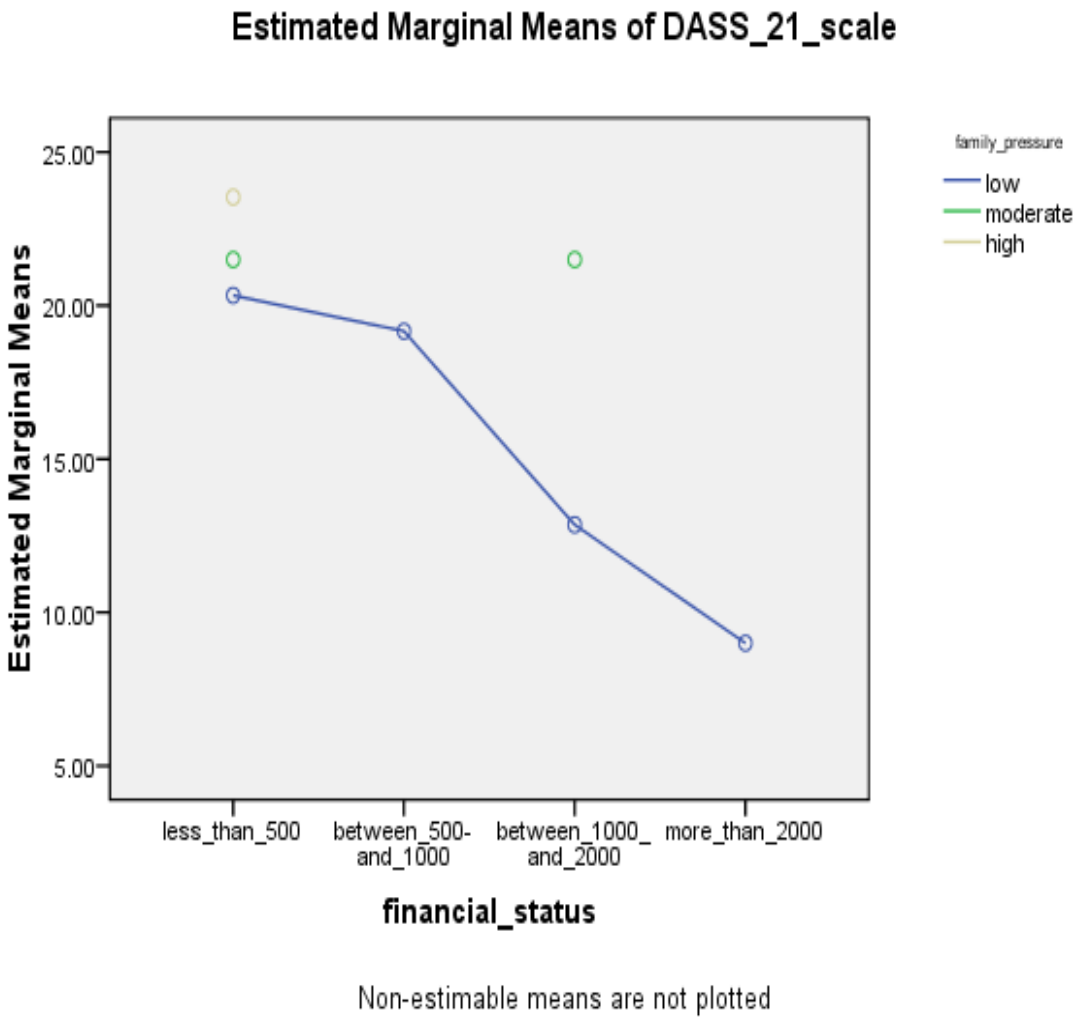


**Figure 3.2.1. Visual representation of the comparison of financial status and family pressure groups based on DASS-21 scale scores**

**Table 3.2.2. Tukey HSD test for comparison of financial status groups based on DASS-21 scale levels**

| (I) financial_status | (J) financial_status | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| less_than_500 | between_500-and_1000 | 3.3718* | 1.14817 | .026 | .3034 | 6.4402 |
| | between_1000_and_2000 | 7.7607* | 1.27238 | .000 | 4.3604 | 11.1610 |
| | more_than_2000 | 13.5385* | 2.00605 | .000 | 8.1774 | 18.8995 |
| between_500-and_1000 | less_than_500 | -3.3718* | 1.14817 | .026 | -6.4402 | -.3034 |
| | between_1000_and_2000 | 4.3889* | 1.45073 | .021 | .5119 | 8.2659 |
| | more_than_2000 | 10.1667* | 2.12366 | .000 | 4.4914 | 15.8420 |
| between_1000_and_2000 | less_than_500 | -7.7607* | 1.27238 | .000 | -11.1610 | -4.3604 |
| | between_500-and_1000 | -4.3889* | 1.45073 | .021 | -8.2659 | -.5119 |
| | more_than_2000 | 5.7778 | 2.19330 | .055 | -.0837 | 11.6392 |
| more_than_2000 | less_than_500 | -13.5385* | 2.00605 | .000 | -18.8995 | -8.1774 |
| | between_500-and_1000 | -10.1667* | 2.12366 | .000 | -15.8420 | -4.4914 |
| | between_1000_and_2000 | -5.7778 | 2.19330 | .055 | -11.6392 | .0837 |

Additionally, according to Tukey post hoc test, participants with income less than 500 AZN have higher DASS-21 score than other income groups ($p<0.05$). Also, the highest difference in DASS-21 score was determined between the group with income less than 500 AZN and the group with income more than 2000 AZN ($p=0.000$). Statistically significant difference was determined between other groups. As a result, Financial status has a significant impact on psychological state, as income increases, DASS-21 score decreases significantly (Table 3.2.2.).

Also, as in DASS-21, a statistically significant effect of family pressure (p = 0.001) and financial status (p = 0.002) on ZUNG scores was determined. That is, ZUNG scores are different in groups with different levels of family pressure and financial status. Family pressure and financial status, separately and together, have a significant effect on the ZUNG scores of the study participants (p = 0.047), (Table 3.2.3.). This analysis is shown visually in Figure 3.2.2.

**Table 3.2.3. Tests of Between-Subjects Effects for Comparison of Financial Status and Family Pressure Groups Based on ZUNG Scale Scores**

**Dependent Variable:**

**ZUNG_scale**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Corrected Model | 2585.422[a] | 6 | 430.904 | 13.180 | .000 | .648 |
| Intercept | 28740.445 | 1 | 28740.445 | 879.064 | .000 | .953 |
| financial_status | 592.066 | 3 | 197.355 | 6.036 | .002 | .296 |
| family_pressure | 503.382 | 2 | 251.691 | 7.698 | .001 | .264 |
| financial_status * family_pressure | 137.202 | 1 | 137.202 | 4.196 | .047 | .089 |
| Error | 1405.858 | 43 | 32.694 | | | |
| Total | 64822.000 | 50 | | | | |
| Corrected Total | 3991.280 | 49 | | | | |

a. R Squared = .648 (Adjusted R Squared = .599)

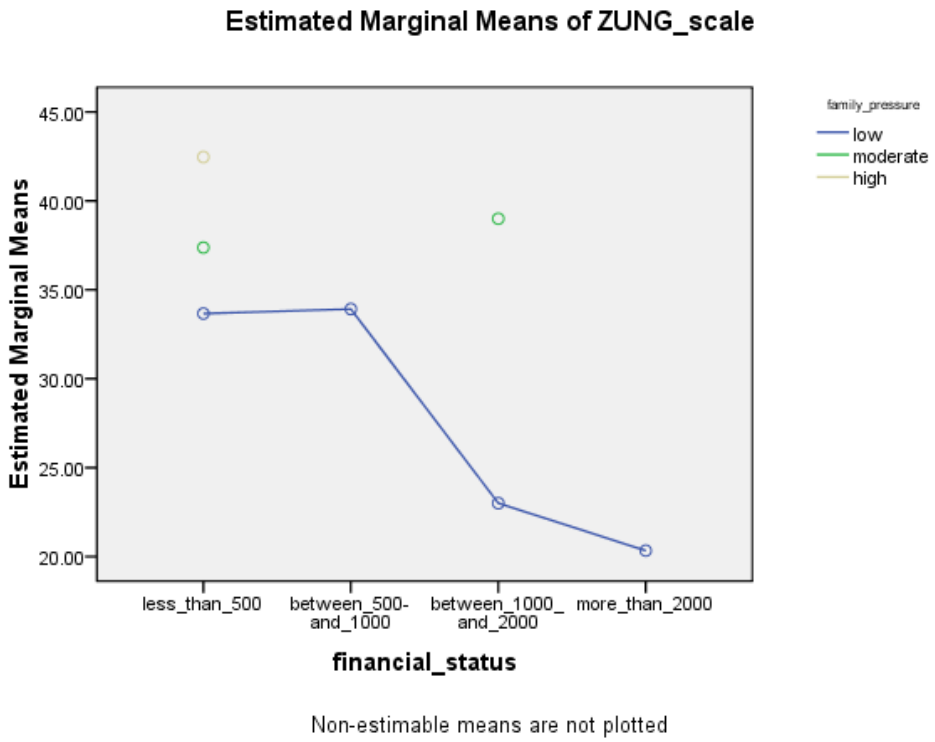


**Figure 3.2.2. Visual representation of the comparison of financial status and family pressure groups based on ZUNG scale scores**

According to the two-way ANOVA analysis, there is a statistically significant effect of infertility duration ($p= 0.001$) and infertility-related stress ($p=0.000$) on DASS-21 scores, as $p< 0.05$. That is, participants with different durations of infertility and different levels of infertility-related stress have different DASS-21 scores (depression, stress, anxiety). However, infertility duration and infertility-related stress together had no significant effect on DASS-21 scores ($p = 0. 256$) (Table 3.2.4.). A visual representation of this result is shown in Figure 3.2.3.

**Table 3.2.4. Tests of Between-Subjects Effects for Infertility Duration and Infertility-Related Stress Group Comparisons Based on DASS-21 Scale Scores**

**Dependent Variable: DASS_21_scale**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Corrected Model | 929.032[a] | 6 | 154.839 | 14.366 | .000 | .667 |
| Intercept | 3498.104 | 1 | 3498.104 | 324.564 | .000 | .883 |
| duration_of_infertility | 179.721 | 2 | 89.860 | 8.337 | .001 | .279 |
| infertility_related_stress | 395.906 | 2 | 197.953 | 18.367 | .000 | .461 |
| duration_of_infertility * infertility_related_stress | 30.336 | 2 | 15.168 | 1.407 | .256 | .061 |
| Error | 463.448 | 43 | 10.778 | | | |
| Total | 20444.000 | 50 | | | | |
| Corrected Total | 1392.480 | 49 | | | | |

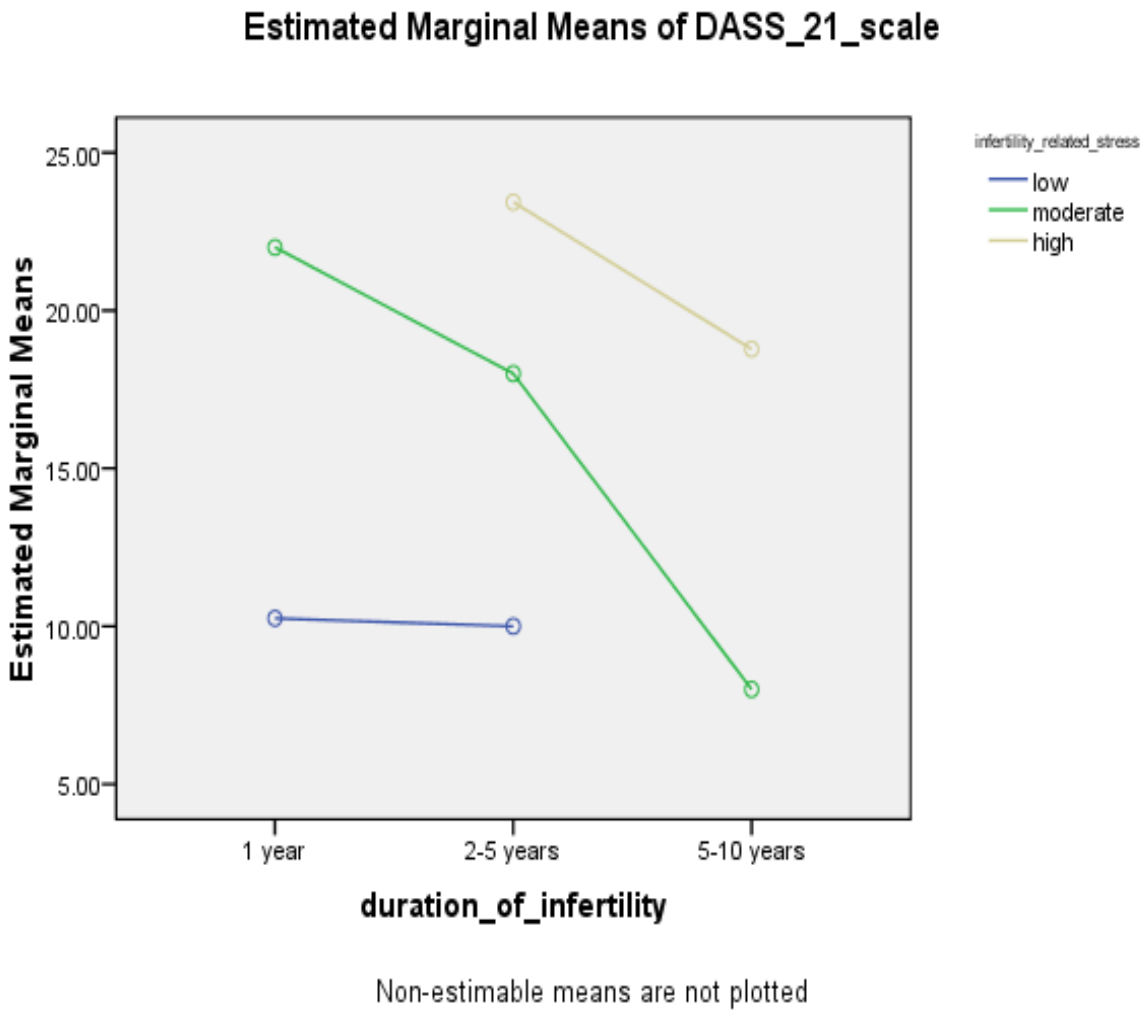


**Figure 3.2.3. Visual representation of the comparison of infertility duration and infertility-related stress groups based on DASS-21 scale scores**

Also, the results of Two-way ANOVA analysis revealed that there was no statistically significant effect of education level (p= 0.332) and family support (p=0.856) on DASS-21 scores, because is p> 0.05. That is, DASS-21 scores (depression, stress, anxiety) in participants with different education levels and different levels of family support did not differ from each other (Table 3.2.5.). A visual representation of the results is presented in Figure 3.2.4.

**Table 3.2.5. Tests of Between-Subjects Effects for Comparison of Education Level and Family Support Groups Based on DASS-21 Scale Scores**

**Dependent Variable:DASS_21_scale**

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Corrected Model | 195.913[a] | 6 | 32.652 | 1.173 | .338 | .141 |
| Intercept | 7871.226 | 1 | 7871.226 | 282.862 | .000 | .868 |
| education_level | 63.037 | 2 | 31.519 | 1.133 | .332 | .050 |
| family_support | 8.693 | 2 | 4.347 | .156 | .856 | .007 |
| education_level * family_support | 24.054 | 2 | 12.027 | .432 | .652 | .020 |
| Error | 1196.567 | 43 | 27.827 | | | |
| Total | 20444.000 | 50 | | | | |
| Corrected Total | 1392.480 | 49 | | | | |

**a. R Squared = .141 (Adjusted R Squared = .021)**

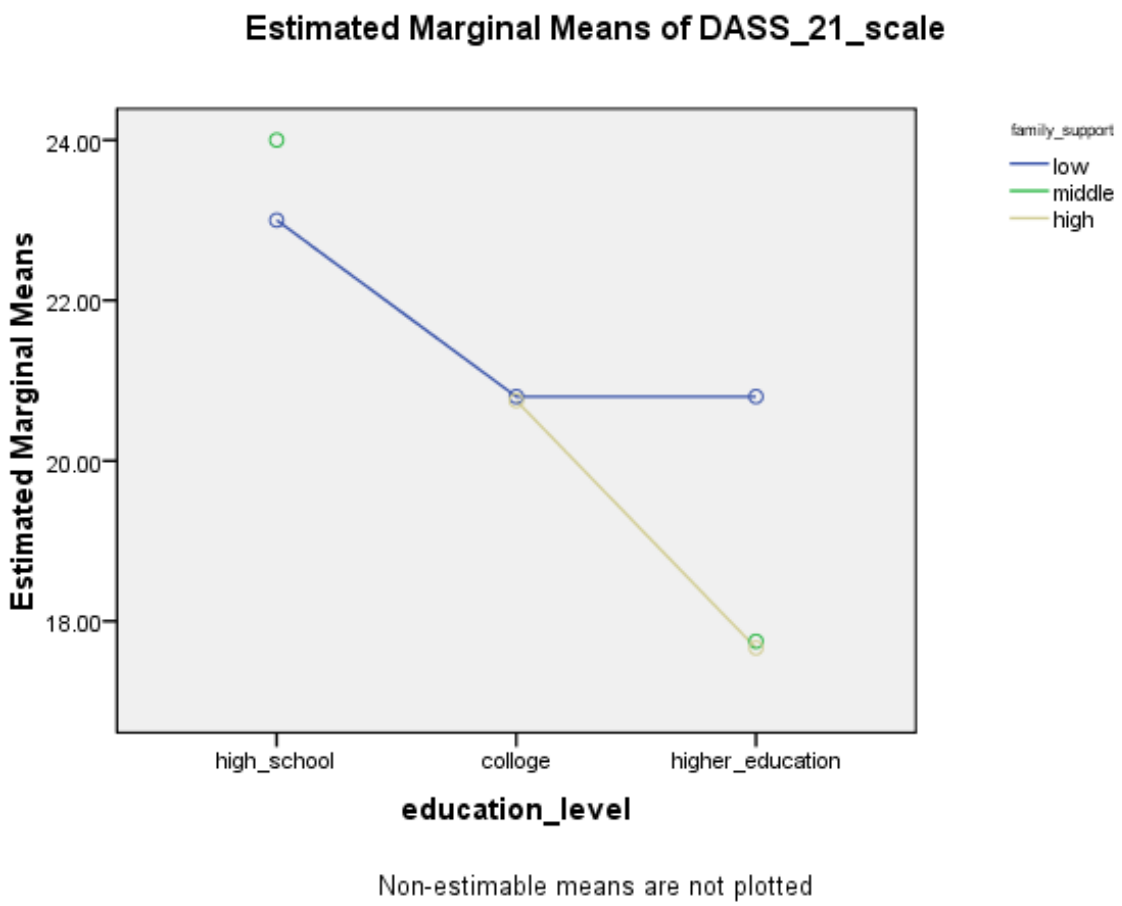


**Figure 3.2.4. Visual representation of the comparison of education level and family support groups based on DASS-21 scale scores**

There is a statistically significant relationship between all groups, because the p value is less than 0.05. The largest statistical difference is observed between low and high social anxiety. As the individual's social anxiety increases, the level for DASS-21 increases (Table 3.2.6).

**Table 3.2.6. Tukey HSD test for comparison of social concern groups based on DASS-21 scale levels**

| (I) social_concerns | (J) social_concerns | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| low | moderate | -4.4000* | 1.15222 | .001 | -7.1993 | -1.6007 |
| | high | -11.0667* | .94078 | .000 | -13.3523 | -8.7810 |
| moderate | low | 4.4000* | 1.15222 | .001 | 1.6007 | 7.1993 |
| | high | -6.6667* | .94078 | .000 | -8.9523 | -4.3810 |
| high | low | 11.0667* | .94078 | .000 | 8.7810 | 13.3523 |
| | moderate | 6.6667* | .94078 | .000 | 4.3810 | 8.9523 |

### 3.3. Analysis of Correlation Results

According to the Pearson correlation analysis, a statistically significant relationship was found between the DASS-21 scale and the ZUNG scale (p= 0.000), since p< 0.05 indicates a statistically significant relationship between the variables. This relationship is strong and positive according to the correlation coefficient (r= 0.967). There was no statistically significant relationship between the age factor and the ZUNG (p=934) and DASS-21 (p=624) scales (p>0.05) (Table 3.3.1). A visual representation of these correlations is presented in Figure 3.3.1.

**Table 3.3.1 Pearson Correlations between age, DASS-21 scale, and ZUNG scale**

**Correlations**

| | | age | DASS_21_scale | ZUNG_scale |
|---|---|---|---|---|
| age | Pearson Correlation | 1 | -.071 | -.012 |
| | Sig. (2-tailed) | | .624 | .934 |
| | N | 50 | 50 | 50 |
| DASS_21_scale | Pearson Correlation | -.071 | 1 | .967** |
| | Sig. (2-tailed) | .624 | | .000 |
| | N | 50 | 50 | 50 |
| ZUNG_scale | Pearson Correlation | -.012 | .967** | 1 |
| | Sig. (2-tailed) | .934 | .000 | |
| | N | 50 | 50 | 50 |

**. Correlation is significant at the 0.01 level (2-tailed).

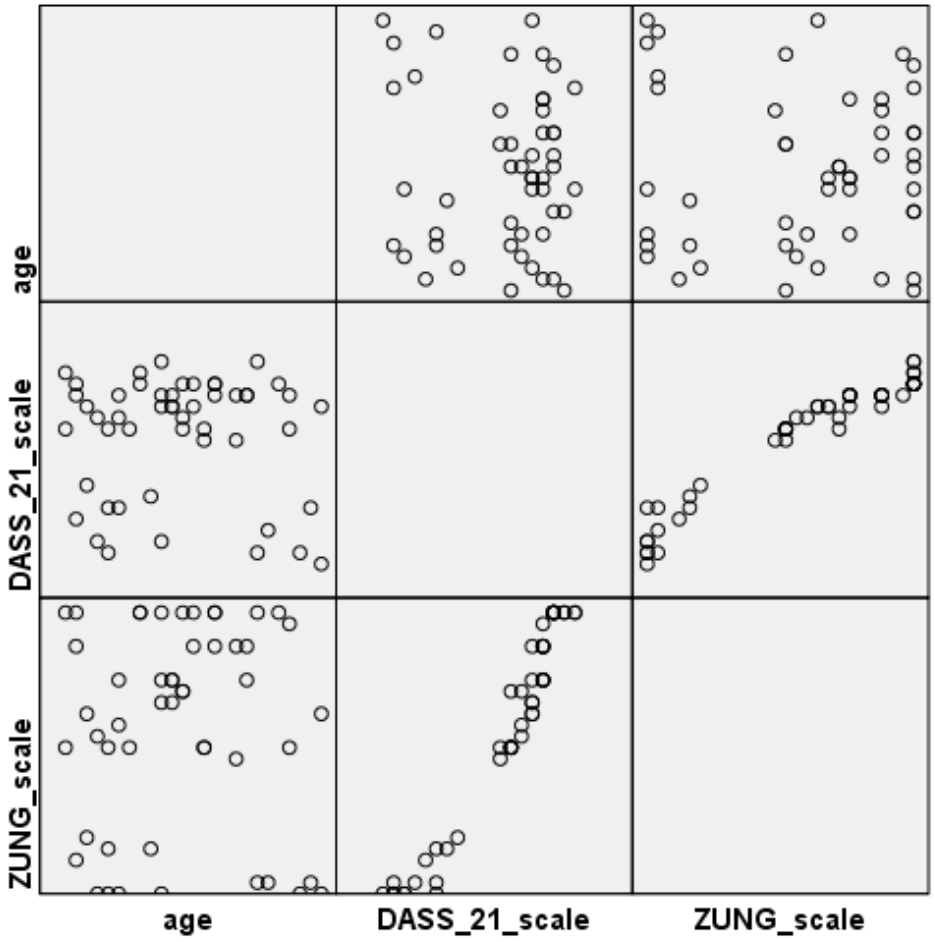


**Figure 3.3.1. Visual description Correlation between Age, DASS-21 scale and ZUNG scale**

Also, Pearson correlation results revealed that there was no statistically significant relationship between infertility-related stress and educational level (p= 0.090), because when p> 0.05, there is no statistically significant relationship between variables. However, there is a statistically significant relationship between infertility-related stress and financial status (p=0.001). Here, there is a moderate and negative relationship (r= -.466). That is, as the level of financial status increases, the level of stress decreases. Also, there was a statistically significant relationship between financial status and educational level (p=0.016). This relationship is weak and positive (r=0.338) (Table 3.3.2)

**Table 3.3.2. Spearman's correlations between infertility related stress, educational level and financial status.**

| | | | infertility_related_stress | education_level | financial_status |
|---|---|---|---|---|---|
| Spearman's rho | infertility_related_stress | Correlation Coefficient | 1.000 | -.243 | -.466** |
| | | Sig. (2-tailed) | . | .090 | .001 |
| | | N | 50 | 50 | 50 |
| | education_level | Correlation Coefficient | -.243 | 1.000 | .338* |
| | | Sig. (2-tailed) | .090 | . | .016 |
| | | N | 50 | 50 | 50 |
| | financial_status | Correlation Coefficient | -.466** | .338* | 1.000 |
| | | Sig. (2-tailed) | .001 | .016 | . |
| | | N | 50 | 50 | 50 |

There is a statistically significant relationship between infertility-related stress and the level of family support (p= 0.002), since p<0.05. There is a moderate and negative relationship (r=-.422). There was also a statistically significant relationship between infertility-related stress and the level of family pressure (p=0.000). This relationship is moderate and positive (r=0.482). There is a statistically significant relationship between family support and family pressure (p=0.000), with a strong and negative relationship (-.658) (Table 3.3.3).

**Table 3.3.3. Spearman's correlations between infertility related stress, family support and family pressure.**

| | | | infertility_related_stress | family_support | family_pressure |
|---|---|---|---|---|---|
| Spearman's rho | infertility_related_stress | Correlation Coefficient | 1.000 | -.422** | .482** |
| | | Sig. (2-tailed) | . | .002 | .000 |
| | | N | 50 | 50 | 50 |
| | family_support | Correlation Coefficient | -.422** | 1.000 | -.658** |
| | | Sig. (2-tailed) | .002 | . | .000 |
| | | N | 50 | 50 | 50 |
| | family_pressure | Correlation Coefficient | .482** | -.658** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | . |
| | | N | 50 | 50 | 50 |

A statistically significant relationship was found between infertility-related stress and the level of parenthood need (p=0.002). There is a moderate and positive relationship here (r=0.420). A statistically significant relationship was found between infertility-related stress and the level of infertility duration (p=0.000). There is a moderate and positive relationship here (r=0.520). There is no statistically significant relationship between the duration of infertility and the level of parenthood need (p=0.531) (Table 3.3.4).

**Table 3.3.4. Spearman's correlations between infertility related stress, need for parenthood and duration of infertility.**

| | | | infertility_related_stress | need_for_parenthood | duration_of_infertility |
|---|---|---|---|---|---|
| Spearman's rho | infertility_related_stress | Correlation Coefficient | 1.000 | .420** | .520** |
| | | Sig. (2-tailed) | . | .002 | .000 |
| | | N | 50 | 50 | 50 |
| | need_for_parenthood | Correlation Coefficient | .420** | 1.000 | .091 |
| | | Sig. (2-tailed) | .002 | . | .531 |
| | | N | 50 | 50 | 50 |
| | duration_of_infertility | Correlation Coefficient | .520** | .091 | 1.000 |
| | | Sig. (2-tailed) | .000 | .531 | . |
| | | N | 50 | 50 | 50 |

**. Correlation is significant at the 0.01 level (2-tailed).

There is a statistically significant (p=0.000) strong relationship between financial status and family support and family pressure. However, this relationship is positive (r=0.623) with family support and negative (r=-.739) with family pressure (Table 3.3.5).

**Table 3.3.5. Spearman's correlations between financial status, family support and family pressure.**

| | | | financial_status | family_support | family_pressure |
|---|---|---|---|---|---|
| Spearman's rho | financial_status | Correlation Coefficient | 1.000 | .623** | -.739** |
| | | Sig. (2-tailed) | . | .000 | .000 |
| | | N | 50 | 50 | 50 |
| | family_support | Correlation Coefficient | .623** | 1.000 | -.658** |
| | | Sig. (2-tailed) | .000 | . | .000 |
| | | N | 50 | 50 | 50 |
| | family_pressure | Correlation Coefficient | -.739** | -.658** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | . |
| | | N | 50 | 50 | 50 |

**. Correlation is significant at the 0.01 level (2-tailed).

There is a statistically significant relationship between social anxiety and family support (p=0.004) and family pressure (p=0.000). The relationship between family support and social anxiety is moderate and negative (r=-.402), and strong and positive with family pressure (r=0.622) (Table 3.3.6.).

**Table 3.3.6. Spearman's correlations between social concerns, family support and family pressure.**

| | | | social_concerns | family_support | family_pressure |
|---|---|---|---|---|---|
| Spearman's rho | social_concerns | Correlation Coefficient | 1.000 | -.402** | .622** |
| | | Sig. (2-tailed) | . | .004 | .000 |
| | | N | 50 | 50 | 50 |
| | family_support | Correlation Coefficient | -.402** | 1.000 | -.658** |
| | | Sig. (2-tailed) | .004 | . | .000 |
| | | N | 50 | 50 | 50 |
| | family_pressure | Correlation Coefficient | .622** | -.658** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | . |
| | | N | 50 | 50 | 50 |

**. Correlation is significant at the 0.01 level (2-tailed).

There is no statistically significant relationship between social anxiety and the level of infertility duration (p=0.185) (Table 3.3.7).

**Table 3.3.7. Spearman's correlations between social concerns and duration of infertility**

| | | | social_concerns | duration_of_infertility |
|---|---|---|---|---|
| Spearman's rho | social_concerns | Correlation Coefficient | 1.000 | .191 |
| | | Sig. (2-tailed) | . | .185 |
| | | N | 50 | 50 |
| | duration_of_infertility | Correlation Coefficient | .191 | 1.000 |
| | | Sig. (2-tailed) | .185 | . |
| | | N | 50 | 50 |

According to the results of the study, statistically significant relationships were identified between anxiety disorders in men with infertility problems and demographic factors (age, education level, financial status, duration of infertility, family support, family pressure and stress, social concerns, etc.) and other social factors. Thus, these factors can affect the psychological state of men with infertility problems and further complicate the treatment process. Based on these results, the hypothesis "The level of anxiety and stress in men with infertility problems is statistically significantly related to the level of social anxiety" was confirmed. The hypotheses "There is a statistically significant relationship between the level of anxiety and stress in men with infertility problems and the level of financial status" and "There is a statistically significant relationship between the stress related to infertility and family support and pressure" were also confirmed. However, the hypothesis "There is a statistically significant relationship between the level of anxiety and stress in men with infertility problems and the level of education" was not confirmed.

## RESULT

Infertility can lead to various consequences as both a medical and psychosocial problem. Therefore, it is important to pay attention to psychosocial factors in medical disorders. In this scientific study, the psychological state of men facing infertility problems, anxiety levels and their interaction with psychosocial factors that affect them were investigated, and an extensive study was conducted on the mechanisms of infertility and anxiety disorders, causes, epidemiology, comorbidity and methods of combating them. At this time, interesting facts emerged, and it was also determined that there is a lack of sufficient research on male infertility. Since anxiety disorders are observed more often in women and infertility has long been considered a female disorder, the impact of infertility on men has not been sufficiently studied. According to scientific and statistical results, infertility is a biological, psychological and social problem and 15% of couples worldwide suffer from this problem. 20% of these cases are related to the male factor alone, 30-40% are related to both female and male factors, and the causes of the remaining cases have not been determined. The etiology of infertility includes hormonal disorders, spermatogenesis disorders, genetic factors, infections, age, exposure to toxic substances (metal poisoning), lifestyle (heavy physical work, etc.), reactive oxygen radicals and DNA damage, etc. At the same time, according to studies, social pressures, future concerns, weakening of the masculine role and stigma can further aggravate the problem of infertility in infertile men, affect the development or increase of stress or anxiety disorders, and affect psychological well-being, family and social relationships. Infertility is also associated with some medical, sexual dysfunctions and psychological disorders (mainly depression, stress and anxiety disorders). Thus, based on the literature review, the concept of infertile men and anxiety disorders was examined in a broad aspect. In order to find the relationship between infertility and anxiety, first of all, the mechanism of occurrence of anxiety disorders and their psychophysiological aspects and biological factors were determined. Thus, anxiety disorders are a psychological disorder prevalent in 14-34% of the population and comorbidity with many psychological and somatic disorders is observed. Long-term stress has caused changes in the hypothalamus, amygdala, hippocampus, and it was found that this constitutes the physiological basis of anxiety symptoms. It was also found that the relationship of psychogenic stress with chronic inflammatory conditions and anxiety disorders can cause both psychological and biological dysfunction. Anxiety disorders are a complex mental disorder formed by the interaction of biological (genetic predisposition, neurobiochemical changes), psychological (childhood trauma, self-esteem problems), and social (stigmatization, family and social

pressures, economic problems) factors. This disorder can occur in parallel with infertility, cardiological, urological, endocrine and neurological diseases. Thus, infertility can affect self-esteem problems, family conflicts, social isolation and stress levels in men. These people do not report their illnesses and psychological difficulties due to stigma or negative thoughts of society, which can lead to a worsening of the level of anxiety or stress. Thus, a significant, strong positive relationship was found between anxiety or stress levels in men with infertility problems and family pressure, social anxiety and the duration of infertility. That is, as family pressure and other social concerns increase, stress or anxiety symptoms related to infertility may also increase. Also, a negative, significant relationship was found between stress or anxiety symptoms of infertile men (based on the ZUNQ and DASS-21 scales) and financial situation and family support. One of the interesting results is that 35 (70%) of the infertile men participating in the study lived in the district, and 15 (30%) lived in the city. There may be various reasons for this (heavy physical work, late medical examination, lack of knowledge, stigma, etc.). These results may contribute to future research, as well as be useful for preventive measures. Since the treatment period for infertility is a long and difficult process, it may further increase the stress level of people suffering from this problem. According to interviews and previous studies, patients who receive psychological therapy experience less stress than those who do not. Therefore, psychological support in addition to medical intervention is particularly important. The concept of infertility is a topic that affects the medical, psychological state and social life of a person. Therefore, the joint cooperation of doctors, psychiatrists and psychologists may be more effective in the treatment of this disorder. Psychological assessment during the initial examination of infertility may have a positive effect on the treatment process. Therefore, taking into account the psychological state during the treatment of all medical disorders may be beneficial for the outcome. Psychological training programs should also be developed to educate patients and their families about the disorder and its psychological effects. These trainings may be useful for patients to better understand and manage the disorder or to learn effective coping strategies. A multidisciplinary approach and psychological assessment may be a means of positively influencing the medical and psychological health of men or patients with infertility problems. The following conclusions were determined in this scientific study:

- Infertility may act as a stressor that accelerates the development of anxiety disorders in men, and stress or anxiety symptoms have been observed in infertile men (based on the DASS-21 and ZUNG scales).

-H1: The level of anxiety and stress in men with infertility problems is statistically significantly related to the level of social anxiety – accepted.

- H2: There is a statistically significant relationship between the level of anxiety and stress in men with infertility problems and the level of financial status – accepted.

- H3: There is a statistically significant relationship between the level of anxiety and stress in men with infertility problems and the level of education - rejected.

- H4: There is a statistically significant relationship between the stress related to infertility and family support and pressure - accepted.

Limitations: The sample size was small, and the psychometric tests intended for the study were not adapted to the Azerbaijani language.

Suggestions: The application of longitudinal studies to determine the development and impact of anxiety disorders after the diagnosis of infertility, and the conduct of larger sample studies may help to make the results more accurate. Also, the application of psychotherapies in the treatment of infertility and the inclusion of psychological screenings during medical examination in the treatment and the development of awareness programs may be useful.

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## ATTACHMENTS

Xəzər universitetinin 2024/2025-ci il protokoluna əsasən tədqiqat işi üçün Etik Komitədən icazə alınmışdır və Bakı şəhər ATU Tədris Cərrahiyə klinikasında keçirilmişdir. Tədqiqat işini keçirməzdən əvvəl iştirakçılara tədqiqatın anonim olacağı haqqında məlumat verilmişdir və onlardan tədqiqatda könüllü iştirak üçün razılıq alınmışdır.

**Əlavə 1**

**Sosial-demoqrafik göstəricilər anketi (Sonsuzluq problemi olan kişilər üçün)**

Ad ,Soyad _____ Yaş _____ Milliyyət _____

Yaşayış yeri (Şəhər/rayon)_____ Cinsiyyət (kişi/qadın)_____

1.Təhsil səviyyəsi

a.yoxdur b.orta məktəb c. kollec d. ali məktəb

2.İşləyirsizmi?

a.bəli b. xeyr

3.Aylıq gəliriniz nə qədərdir?

a. 500-dən az b. 500-1000 aralığında c. 1000-2000 aralığında d. 2000-dən çox

4. Ailə vəziyyəti

a evli b.subay c.boşanmış

5.Sizə həkim tərəfindən sonsuzluq diaqnozu qoyulub mu?

a.hə b.yox

6.Nə vaxtdan bəri sonsuzluq promlemindən əziyyət çəkirsiz ? qeyd edin

Tarix_____

7.Sizə qarşı ailə dəstəyi necədir ?

a.pis b.orta c.yaxşı

8.Sonsuzluqla əlaqəli şəxsi narahatlıq və ya stressiniz hansı səviyyədədir ?

a.çox az b.az c.orta d.çox yüksək

9.Əgər stress və ya narahatlıq səviyyənizi rəqəmlərlə ifadə edə bilsəydiniz, 0-100% aralığında hansı qiyməti verərdiniz ? _____

10.Sonsuzluq problemi ilə bağlı ailə təzyiqi varmı ?

a.çox az b.az c.orta d.çox yüksək

11.Sonsuzluq problemi ilə bağlı cəmiyyətin və ya ətrafınızdakıların təzyiqi varmı ?

a.çox az b.az c.orta d.çox yüksək

12.Övlad ehtiyyacı hissiniz var mı?

a. heç yoxdur b.biraz var c.orta dərəcədə var d.çox var

13.Nə vağtsa psixiatra müraciət etmisiz mi?

a.hə b.yox

**Əlavə 2**

**DASS 21**

Zəhmət olmazsa, hər bir cümləni oxuduqdan sonra, onların hər birinin keçən həftə ərzində yaşadığınız vəziyyətlərə nə qədər uyğun olduğunu göstərin. Bunun üçün həmin cümlələrin qarşısındakı 0, 1, 2 və ya 3 rəqəmlərindən birini dairəyə alın. Burda səhv və düzgün cavablar yoxdur. Cümlələr üzərində çox fikirləşməyin.

**Rəqəmlərin izahı:**

0 – mənə heç bir aidiyyatı yox idi. HEÇ VAXT

1 – mənə müəyyən dərəcədə, yaxud bəzi hallarda aidiyyatı var idi. BƏZƏN

2 – mənə çox, yaxud bir çox hallarda aidiyyatı var idi. TEZ-TEZ

3 Mənə tam, yaxud vaxtın əksər hissəsi aidiyyatı var idi – DEMƏK OLAR Kİ HƏMİŞƏ

Ad,soyad _____

Qiymətləndirmə tarixi _____

| | | Heç vaxt | Bəzən | Tez-tez | həmişə |
|---|---|---|---|---|---|
| 1 | Gərginlikdən çıxmaq mənə çətin idi | 0 | 1 | 2 | 3 |
| 2 | Mən ağzımın qurumasını hiss edirdim | 0 | 1 | 2 | 3 |
| 3 | Heç bir müsbət hiss yaşaya bilmədim | 0 | 1 | 2 | 3 |
| 4 | Nəfəs almaqda çətinlik çəkirdim (məsələn, tez-tez nəfəsalma, fiziki iş görmədən tənginəfəslik keçirirdim) | 0 | 1 | 2 | 3 |
| 5 | Mən nəsə etmək üçün təşəbbüs göstərməkdə çətinlik çəkirdim | 0 | 1 | 2 | 3 |
| 6 | Mən hadisələrə həddən artıq reaksiya verməyə meylli idim | 0 | 1 | 2 | 3 |
| 7 | Əsməcəyə düşürdüm (məs. əllərim əsirdi) | 0 | 1 | 2 | 3 |
| 8 | Özümü çox əsəbi hiss edirdim | 0 | 1 | 2 | 3 |
| 9 | Məni təlaşa və ya gülünc vəziyyətə sala biləcək hadisələrdən narahat idim | 0 | 1 | 2 | 3 |
| 10 | Hiss etdim ki, gələcəklə bağlı heç bir gözləntim yoxdu | 0 | 1 | 2 | 3 |
| 11 | Hiss edirdim ki, təşvişə düşmüşəm | 0 | 1 | 2 | 3 |
| 12 | Mən sakitləşməkdə/rahatlaşmaqda çətinlik çəkdim | 0 | 1 | 2 | 3 |
| 13 | Özümü əhvalsız və qəmgin hiss etdim | 0 | 1 | 2 | 3 |
| 14 | Əlimdə olan işi görməyimə maneə olan hər bir şeyə qarşı dözümsüz idim | 0 | 1 | 2 | 3 |
| 15 | Panikaya düşməyə yaxın olduğumu hiss etdim | 0 | 1 | 2 | 3 |
| 16 | Heçnəyə qarşı həvəs olmurdu | 0 | 1 | 2 | 3 |
| 17 | Bir insan kimi dəyərsiz olduğumu hiss etdim | 0 | 1 | 2 | 3 |
| 18 | Həddən artıq həssas olduğumu hiss etdim | 0 | 1 | 2 | 3 |
| 19 | Fiziki fəaliyyət olmadıqda belə ürəyimin döyüntüsünü hiss edirdim (məsələn artan ürək döyüntüsünün artması və ya azalması) | 0 | 1 | 2 | 3 |
| 20 | Heç bir səbab olmadan qorxu hiss edirdim | 0 | 1 | 2 | 3 |
| 21 | Mən həyatın mənasız olduğunu hiss etdim | 0 | 1 | 2 | 3 |

**DASS şkalası**

DASS, distressin (mənfi stress) depressiya, təşviş və stress-dən ibarət 3 oxunu **kəmiyyət** baxımından ölçür.

**Hesablama açarı**

Aşağıda cədvəldəki 21 ədəd ifadələrin nömrələri 3 psixoloji pozuntuya əsasən qruplaşdırılmışdır. Nəticəni hesablamaq üçün ayrı-ayrı qeyd edilən 3 psixoloji pozuntuya aid ifadələrin qarşısındakı seçilən xallar(0, 1, 2, 3) toplanılmalıdır. Məsələn- depressiyaya aid ifadələrin(3,5,10,13,16,17,21) yuxarıdakı cədvəldə qarşılarında iştirakçı tərəfindən qeyd edilən xalları toplanılmalıdır və sonuncu cədvələ əsasən depressiyanın hansı səviyyədə olduğunu bilmək olar.

Depressiya: 3, 5, 10, 13, 16, 17, 21

Təşviş: 2, 4, 7, 9, 15, 19, 20

Stress: 1, 6, 8, 11, 12, 14, 18

**DASS 21 BALLARI**

| **DEPRESSİYA BALI** | **TƏŞVİŞ BALI** | **STRESS BALI** |
|---|---|---|
| | | |

| | **Depressiya** | **Təşviş** | **Stress** |
|---|---|---|---|
| **Normal** | 0-4 | 0-3 | 0-7 |
| **Yüngül** | 5-6 | 4-5 | 8-9 |
| **Orta ağır** | 7-10 | 6-7 | 10-12 |
| **Ağır** | 11-13 | 8-9 | 13-16 |
| **Çox ağır** | 14+ | 10+ | 17+ |

**Əlavə 3**

## ZUNQUN ÖZ-ÖZÜNÜ QİYMƏTLƏNDİRMƏ TƏŞVİŞ CƏDVƏLİ

Sizdən xahiş olunur ki cədvəlin sol sütunda olan fikirləri diqqətlə oxuyasınız və son 7 gündə olan halınıza ən uyqun olan cavabı qeyd edəsiniz.

| Uyğun olan cədvəl sütunlarında işarənizi (V) qeyd edin | NADİR HALLARDA | ARABİR | TEZ-TEZ | ƏKSƏR HALLARDA VƏ YA HƏMİŞƏ |
|---|---|---|---|---|
| 1. Mən özümü adi halımdan daha əsəbi və təşvişli hiss edirəm | 1 | 2 | 3 | 4 |
| 2. Mən səbəbsiz qorxu hissi keçirdirəm | 1 | 2 | 3 | 4 |
| 3. Məni asanlıqla pərt etmək və ya təlaşa salmaq olar | 1 | 2 | 3 | 4 |
| 4. Mən hiss edirəm ki özümü ələ ala bilmirəm | 1 | 2 | 3 | 4 |
| 5. Mən hiss edirəm ki hər şey yaxşıdır və heç bir bəd hadisə baş verməyəcək | 4 | 3 | 2 | 1 |
| 6. Mənim əllərim və ayaqlarım titrəyib əsir | 1 | 2 | 3 | 4 |
| 7. Mən baş ağrılardan, boynumda və kürəkdə ağrılardan əziyyət çəkirəm | 1 | 2 | 3 | 4 |
| 8. Mən özümü zəif hiss edirəm və tez yoruluram | 1 | 2 | 3 | 4 |
| 9. Mən özümü sakit hiss edirəm və asanlıqla rahat oturmağa bacarıram | 4 | 3 | 2 | 1 |
| 10. Məndə ürəkdöyünmələr olur | 1 | 2 | 3 | 4 |
| 11. Məndə başgicəllənmələr olur | 1 | 2 | 3 | 4 |
| 12. Məndə ürəkgetmələr olur və ya mən hiss edirəm ki ürəkgetməyə yaxınam | 1 | 2 | 3 | 4 |
| 13. Mən rahat nəfəs alıram | 4 | 3 | 2 | 1 |
| 14. Mən əl və ayaq barmaqlarımda giziltilər və keyimələr hiss edirəm | 1 | 2 | 3 | 4 |
| 15. Məndə mədə ağlıları və qarın pozuntusu olur | 1 | 2 | 3 | 4 |
| 16. Mən tez-tez işəməyə gedirəm | 1 | 2 | 3 | 4 |
| 17. Mənim əllərim adətən soyuq olmur və qurudur | 4 | 3 | 2 | 1 |
| 18. Mənim sifətim qızarıb yanır | 1 | 2 | 3 | 4 |
| 19. Mən asanlıqla yuxuya gedirəm və rahatlıqla yatıb dincəlirəm | 4 | 3 | 2 | 1 |
| 20. Məndə yuxuda qarabasmalar olur | 1 | 2 | 3 | 4 |

ZUNQUN ÖZ-ÖZÜNÜ QİYMƏTLƏNDİRMƏ TƏŞVİŞ CƏDVƏLİ ballarının hesablanması zamanı iştirakçının qeyd etdiyi cavablar toplanmalıdır.

20-44 Norma

45-59 yüngül dərəcəli təşviş pozuntusu

60-75 ağır dərəcəli təşviş pozuntusu

75-80 Kəskin ağır dərəcəli təşviş pozuntusu

**Əlavə-4**

## ABSTRACT

The dissertation study examines the anxiety and stress levels of men with infertility problems. The main objective of the scientific work is to study the anxiety and stress levels in infertile men and other influencing factors. Chapter I presents the general views of researchers on anxiety and stress disorders. The terms anxiety and fear are explained psychologically and physiologically, as well as their symptoms, psychophysiological mechanisms, etiology and comorbidity with other medical and psychological disorders, and psychological treatment methods. The concept of infertility is also explained, the mechanisms of its formation, psychosomatics, types, treatment methods, and the relationship with other medical and psychological disorders and long-term consequences are noted. In addition, the concept of infertile men and their social difficulties, the impact of the psychosocial impact of infertility on life activities, family relationships and sexual activity are explained. Chapter II describes the organization, conduct and methods of the research, the questionnaires and scales used. Finally, Chapter III explains the statistical analysis of research data. Male patients with infertility problems are the object of the study, the subject of the study is to investigate the relationship between this disease and anxiety disorders in infertile men and other factors affecting this relationship. 50 men with infertility problems participated in the study and their age ranged from 26 to 50. According to the results of the study, statistically significant relationships were identified between anxiety disorders in men with infertility problems and demographic data (age, education level, financial status, duration of infertility, family support and pressure, etc.) and other social factors. 4 hypotheses were put forward in the research work. 1. The level of anxiety and stress in men with infertility problems is statistically significantly related to the level of social anxiety – accepted. 2. There is a statistically significant relationship between the level of anxiety and stress in men with infertility problems and the level of financial status – accepted. 3. There is a statistically significant relationship between the level of anxiety and stress in men with infertility problems and the level of education - rejected. 4. There is a statistically significant relationship between the stress related to infertility and family support and pressure - accepted. Parametric methods "Pearson" and "Sperman" correlation analysis and Two-Way ANOVA analysis and Tukey's test were used for the statistical analysis of the results obtained from the research methods. The statistical significance of the results was determined based on the $p<0.05$ level.

**Əlavə-5**

# XÜLASƏ

Dissertasiya işi sonsuzluq problemi olan kişilərin təşviş-həyəcan səviyyələrini tədqiq edir. Elmi işin əsas məqsədi sonsuz kişilərdə təşviş-həyəcan səviyyəsini və təsir edən digər amillərin tədqiq edilməsindən ibarətdir. I fəsildə tədqiqatçıların təşviş-həyəcan pozuntuları haqqında ümumi fikirləri qeyd edilmişdir. Təşviş və qorxu terminləri psixoloji və fizioloji cəhətdən izah edilmişdir, həmçinin əlamətləri haqqında, psixofizioloji mexanizmləri, etiologiyası və digər tibbi, psixoloji pozuntularla comorbidliyi, psixoloji müalicə üsulları geniş formada izah edilmişdir. Həmçinin sonsuzluq anlayışı izah edilmiş, yaranma mexanizmləri, psixosomatikası, növləri müalicə üsulu və digər tibbi və psixoloji pozuntularla əlaqəsi və uzaq nəticələri qeyd edilmişdir. Əlavə olaraq sonsuz kişi anlayışı və sosial çətinlikləri, sonsuzluğun psixososial təsirinin həyat fəaliyyətinə, ailə münasibətlərinə və cinsi fəaliyyətə təsiri izah edilmişdir. II fəsildə tədqiqat işinin təşkili, keçirilməsi və metodları, istifadə edilən anket və şkalalar qeyd edilmişdir. Sonuncu olaraq, III fəsildə tədqiqat məlumatlarının statistik təhlili izah edilmişdir. Sonsuzluq problemi olan kişi xəstələr tədqiqatın obyektidir, tədqiqatın predmeti sonsuz kişilərdə bu xəstəlik ilə təşviş-həyəcan pozuntuları arasındakı əlaqəni və bu əlaqəyə təsir edən digər amilləri araşdırmaqdan ibarətdir. Tədqiqatda sonsuzluq problemi olan 50 kişi iştirak edirdi və yaş 26-50 aralığında idi. Tədqiqat nəticələrinə əsasən sonsuzluq problemi olan kişilərin təşviş-həyəcan pozuntuları ilə demoqrafik məlumatlar(yaş, təhsil səviyyəsi, maddi vəziyyət, sonsuzluq müddəti, ailə dəstəyi və təyziqi və.s ) və digər sosial amillər arasında statistik əhəmiyyətli əlaqələr müəyyən edildi. Tədqiqat işində 4 hipotez irəli sürülüb. 1. Sonsuzluq problemi olan kişilərdə narahatlıq və stress səviyyəsi statistik olaraq sosial narahatlıq səviyyəsi ilə əlaqəlidir - qəbul edilir. 2. Sonsuzluq problemi olan kişilərdə narahatlıq və stress səviyyəsi ilə maddi vəziyyətin səviyyəsi arasında statistik əhəmiyyətli əlaqə mövcuddur – qəbul edilir. 3. Sonsuzluq problemi olan kişilərdə narahatlıq və stress səviyyəsi ilə təhsil səviyyəsi arasında statistik əhəmiyyətli əlaqə var - rədd edilir. 4. Sonsuzluqla bağlı stress və ailə dəstəyi və təzyiqi arasında statistik əhəmiyyətli əlaqə var - qəbul edilir. Tədqiqat metodlarından əldə edilən nəticələrin statistik təhlili üçün parametrik metodlardan “Pirson” və “Sperman” korrelyasiya analizindən və İkitərəfli ANOVA analizindən və Tukey testindən istifadə edilmişdir. Nəticələrin statistik əhəmiyyəti $p<0.05$ səviyyəsinə əsasən müəyyən edilmişdir.