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Scientific Effects of Reflexology on Anxiety: Current Research and Findings

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Abstract

Reflexology is a complementary therapy method that aims to reduce pain, stress and anxiety by applying pressure to certain points in the feet (Bolsoy & Flower Read, 2019) ^[7]. In recent years, studies have increased the effects of reflexology on anxiety. This article compiles current scientific studies and findings that evaluate the effectiveness of reflexology in reducing anxiety levels.

Systematic reviews show that the number of experimental studies investigating the effects of reflexology on anxiety, depression and quality of life has increased (Bolsoy & Flower Read, 2019) ^[7]. In particular, reflexology applied in gynecological cancer patients was found to be effective in reducing anxiety and depression levels (Göral Türkcü, 2020) ^[20]. Similarly, reflexology in menopausal periods is useful in alleviating psychological symptoms such as anxiety, tension

and insomnia (Karaçam & Kızılkaya Beji, 2022) ^[27].

The effects of reflexology on anxiety are associated with relief in the body by increasing parasympathetic nervous system activity. This mechanism can contribute to reducing the levels of stress and anxiety. However, some of the existing studies contain methodological limitations and care should be taken with the generalizability of the results. Therefore, more randomized controlled work is needed to determine the effectiveness of reflexology in anxiety treatment.

As a result, existing findings show that reflexology may be a potential complementary therapy in anxiety management. However, by considering the limitations of research in this field, advanced research is necessary to better understand the role of reflexology in clinical practices.

Keywords: Reflexology, Anxiety, Complementary Therapy, Stress Management, Parasympathetic Nervous System

Introduction

Anxiety is a mental health problem that is commonly seen in modern societies and adversely affects the quality of life of individuals. In addition to traditional treatment methods, complementary and alternative therapies attract more and more attention in the management of anxiety. In this context, reflexology draws attention as a potential intervention in alleviating anxiety symptoms.

Reflexology is a complementary medical method aimed at regulating the body's energy balance and alleviating various health problems through pressure applied to certain points in foot, hands and ears. This therapy is based on the principle that certain parts of the body are associated with specific points on the feet, and it is thought that the pressure applied to these points may have healing effects on the related organ or system.

In recent years, scientific studies that examine the effects of reflexology on anxiety have increased. For example, a study aiming to determine the effect of reflexology in reducing anxiety levels in patients with coronary angiography has contributed to the literature (Kahraman, 2016) ^[25]. Similarly, there are studies in gynecological cancer patients that evaluate the effects of reflexology applied during chemotherapy on anxiety, depression and quality of life (Alan, 2017) ^[3].

Understanding the effects of reflexology on anxiety is important in terms of increasing the quality of life of individuals and providing alternative intervention options to health professionals. For this reason, the examination of current scientific research, which evaluates the effectiveness of reflexology in alleviating anxiety symptoms, is necessary to determine the potential role of this therapy method in clinical practices.

Aim

Anxiety is a common mental health problem that negatively affects individuals' daily lives, business performances and social relations. Although traditional anxiety treatment methods include pharmacological and psychotherapeutic interventions, complementary and alternative medicine applications are increasingly attracting more and more interest (Öztürk & Uğur, 2021). In this context, it draws attention as an application with the potential to reduce reflexology, stress management and anxiety levels.

The main purpose of this study is to evaluate the scientific effects of reflexology on anxiety and to reveal the effectiveness of this complementary therapy method in the light of current research. In this respect, it will be examined how reflexology affects the levels of anxiety, which mechanisms it has achieved and how it gives results in different patient groups. In particular, research on how reflexology regulates the secretion of stress hormones by increasing parasympathetic nervous system activity will be discussed (Kaya & Karaca, 2022) ^[28].

In addition, this article will question the use of reflexology as a complementary method in the treatment of anxiety and discuss the potential benefits of the application in individual and clinical fields. In this context, experimental studies will be evaluated in different patient groups (for example, pregnant women, oncology patients, individuals with surgical procedures and people who have diagnosed general anxiety disorder).

Finally, considering that more scientific data should be provided about the effectiveness of reflexology, suggestions will be presented for future research. Thus, it is aimed to present a more comprehensive perspective on the role of reflexology in anxiety management.

Method

This study was conducted using a systematic literature screening method in order to evaluate the scientific effects of reflexology on anxiety. In this study, academic sources such as randomized control studies (RCT), meta-analysis, systematic reviews and experimental research were analyzed.

This study was conducted on the basis of a qualitative research method, systematic literature review. Qualitative research aims to provide in-depth information on a particular subject by analyzing the existing literature extensively (Gough, Oliver & Thomas, 2017) ^[19]. The study aims to synthesize the data obtained from past research to better understand the role of reflexology in anxiety management.

During the data collection process, national and international academic databases such as PUBMED, Scopus, Web of Science, Google Scholar and TR directory were used. The following keywords were used during the literature screening:

"Reflexology and anxiety"

"Complementary Medicine and Stress Management"

"Anxiety therapy with reflexology"

"Reflexology and Anxiety"

"Complementary Medicine and Anxiety Management"

During the access to the studies, refereed articles published between 2015-2024 were taken into consideration and studies that are not directly related to the subject or have sufficient scientific validity were excluded.

The criteria of being included in the study and exclusion are determined as follows:

- ✓ Experimental or observational studies examining the effects of reflexology on anxiety,
- ✓ Randomized controlled studies (RCT) and systematic reviews,
- ✓ Current academic articles published in and after and after the year 2015,
- ✓ Studies published in refereed journals that can be accessed to complete text.

Exclusion criteria:

- ✓ Only inadequate studies based on case reports or methodologically
- ✓ Researches examining the relationship between interrelacism with diseases other than anxiety,
- ✓ Experimental studies on animals,
- ✓ Unexpected studies.

The data obtained were evaluated using the thematic analysis method (Braun & Clarke, 2006) ^[9]. The findings from the studies were analyzed by dividing the themes showing the effects of reflexology on anxiety. Especially reflexology:

- ✓ Biological mechanisms (effects on nervous system and hormone regulation),
- ✓ Psychological effects (role in anxiety, stress and depression management),
- ✓ Fisiological Effects (Effects on Heart Rate, Respiratory Rhythm and Muscle Loosition) classified under basic categories such as.

Since this study is based on literature screening, there is no need for ethics committee permission. However, it has been made sure that all academic resources examined in the study have been published in accordance with ethical rules, and the quotes have been shown in accordance with APA 7 format.

1. History of Reflexology

Reflexology is an old complementary method of historically applied in different cultures and civilizations. The belief that certain points in the sole of the foot are linked to the organs in the body has emerged with similar approaches in different geographies. Today, reflexology, traditional practices and modern scientific research is developed and used in areas such as stress and anxiety management (Kunz & Kunz, 2008) ^[31]. The origins of reflexology are based on ancient civilizations such as Egypt, China, India and Central America. In Egypt, BC. Hieroglyphs showing that the feet and hands were treated by massage on the grave walls of 2500 years were found. These drawings show that reflexology is used as a medical practice in ancient Egypt (Tirana, 2010) ^[43]. In China, in line with the understanding of the energy flow, which is one of the basic principles of traditional Chinese medicine (TCM), the pressure on the sole of the feet was used to stimulate energy meridians in the body. Reflexology, which is based on similar principles with acupuncture and acupressure, has been applied in Chinese medicine for thousands of years (Li, 2013) ^[33]. In

India, Ayurveda medicine, believing that certain points on the feet are linked to the internal organs, the massage made to these areas suggested that the body balances. Reflexology-like practices, along with yoga and Ayurveda therapies, has been among the traditional health practices (Bhattacharya, 2014) ^[6]. Reflexology, for the first time as a scientific discipline in modern medicine. It is systematically handled by William H. Fitzgerald. In 1917, Fitzgerald put forward the basic principles of reflexology under the name of "Zone Therapy" (Regional Therapy) and suggested that certain parts of the body were linked to the points on the hands and feet (Fitzgerald, 1917) ^[17]. Later, physiotherapist Eunice Ingham developed a modern reflexology map to improve Fitzgerald's work. In the 1930s, Ingham argued that there were certain reflex points representing the whole body at the base of the feet and that the pressure on these points could have positive effects on the relevant organ or system (Ingham, 1938) ^[22]. It is known that the reflexology map used today is largely based on Ingham's work. Today, reflexology has become one of the most widely used methods in the field of complementary and alternative medicine. The World Health Organization (WHO) accepts reflexology among complementary medicine practices and states that it is integrated into health systems in some countries (WHO, 2019) ^[46]. Especially in recent years, scientific studies have examined the positive effects of reflexology on anxiety, stress management, chronic pain and sleep disorders (McCullogh *et al.*, 2021) ^[36]. Research on cancer patients, women in menopausal periods, postoperative patients and individuals diagnosed with general anxiety disorder shows that reflexology relaxes by reducing stress hormones (cortisol) levels (Tirana & Chummun, 2022) ^[44]. As a result, reflexology has an ancient history and is supported by scientific researches and is now considered as a complementary method in many health areas, especially stress and anxiety management.

2. Theoretical Foundations of Reflexology

Reflexology is a complementary method that aims to alleviate health problems in various parts of the body through pressure applied to certain points in the foot, hands and ears. The theoretical foundations of this method are based on the principles of regulating energy flow, providing homeostasis and creating positive effects on the nervous system (Marquardt, 2015) ^[35].

✓ Enerji Flow and Qi Theory

The theoretical infrastructure of reflexology includes the flow of Qi (life energy), one of the basic principles of traditional Chinese medicine. According to this theory, energy meridians flowing in the body can be regulated through certain reflex points and imbalances in energy flow can cause health problems (Li, 2013) ^[33]. Reflexology aims to balance Qi flow in the body by stimulating these energy meridians and thus supports physical and mental health.

✓ System System Theory

Another important theoretical basis of reflexology is linked to the nervous system. Various organs of the body are neurally linked to certain reflex points in the feet and hands. Neurologists such as Sir Henry Head and Sir Charles Sherrington argued that the points on the body surface have a reflex relationship with internal organs (Sherrington, 1947) ^[40]. According to this theory, the pressure on the

reflex points have positive effects on the central nervous system through nerve paths, which provides relaxation in the body.

✓ Homeostasis and Holistic Approach

The theoretical foundations of reflexology include the concept of homeostasis. Homeostasis is the process of protecting the internal balance of the body and reflexology is thought to support this balance (Kunz & Kunz, 2008) ^[31]. Reflexology treats the entire body as a whole and aims to optimize the functions of the organs through pressure applied to certain reflex points. The holistic health approach involves evaluating the physical, mental and emotional health of the individual together.

✓ Zon Theory

Modern theoretical foundations of reflexology, Dr. It is based on the zone theory developed by William H. Fitzgerald. According to this theory, the body is vertically divided into ten equal energy zones (zone) and each region corresponds to certain points in the feet and hands (Fitzgerald, 1917) ^[17]. The pressure on these zones may have healing effects in the organ or system in the relevant region. Eunice Ingham developed this theory of Fitzgerald and argued that the reflex points on the feet represent all organs in the body (Ingham, 1938) ^[22].

✓ Psychoneuroimmunology (PNI) Connection

Psychoneuroimmunology (PNI) theory is also important in explaining the effects of reflexology on anxiety. PNI is a science that examines the effects of mental conditions (eg stress and anxiety) on the nervous system and the immune system. Reflexology is thought to reduce the level of stress hormones such as cortisol by activating the parasympathetic nervous system and thus improve immune functions (McCullogh *et al.*, 2021) ^[36].

In the light of these theoretical foundations, reflexology appears as a holistic therapy method that supports not only physical health but also mental and emotional balance.

3. Physiological Mechanisms of Reflexology

Reflexology is a complementary therapy method aimed at creating positive effects on the nervous system, circulatory system, immune system and hormonal system through pressure performed to certain body regions (usually feet, hands and ears). These mechanisms explain why reflexology can be effective in various health fields such as anxiety, stress, pain management, digestive system disorders and immune functions.

✓ Effects on the System System

One of the most basic physiological effects of reflexology occurs on the nervous system. Reflex points in the feet, hands and ears are linked to the central nervous system. The studies of neurophysiologists such as Sir Charles Sherrington and Sir Henry Head have shown that certain skin areas are linked to internal organs and nervous reflex paths (Sherrington, 1947) ^[40].

Parasympathetic nervous system activation: Reflexology activates the parasympathetic nervous system and creates a response that provides relaxation and relaxation in the body. The parasympathetic system manages the body's response to "rest and digestion" and can balance the stress response caused by over-activation of the sympathetic nervous

system (McCullogh *et al.*, 2021) [36].

During the application of reflexology, the vagus nerve is stimulated.

Sympathetic activity decreases and the heart rate slows down.

Blood pressure decreases, stress hormones are reduced and general relaxation is achieved.

This effect is one of the basic mechanisms that explain that reflexology is effective in anxiety management and stress reduction.

Autonomic nervous system balancing: Reflexology has a balancing effect on the autonomic nervous system. The autonomic nervous system regulates involuntary physiological processes (heartbeat, respiratory, digestion, etc.). In cases of stress and anxiety, the sympathetic nervous system (war or how many reactions) becomes extremely activated, while reflexology supports homeostasis in the nervous system by balancing this extreme activity through a parasympathetic system (Tirana & Chummun, 2022) [44].

✓ Effects on the abstract system

The effects of reflexology on the circulatory system are based on increasing blood flow and improving tissue oxygenation.

Increased blood circulation: Pressure to certain regions during reflexology applications increases blood flow by expanding blood vessels. This may accelerate tissue renewal by transporting more oxygen and nutrients to organs (Liddle, 2014) [34].

Chronic stress can negatively affect circulation by narrowing blood vessels.

Reflexology improves circulation by promoting vasodilatation.

It helps pain management by increasing oxygenation in muscles and organs.

This mechanism explains why reflexology may be effective in disorders associated with circulatory disorders such as migraine, blood pressure and chronic fatigue (Marquardt, 2015) [35].

Lymph drainage and toxin excretion: Reflexology can facilitate the excretion of toxins from the body by accelerating lymph circulation. The lymphatic system is an important system that regulates the body's immune functions and cleanses waste materials.

Lymph flow is supported by muscle movements and external pressures.

Reflexology can accelerate detoxification by increasing the circulation of lymphatic fluid.

In cases such as bloating, payment -related pain and inflammation, it may have relaxing effects of reflexology (Tirana, 2010) [43].

✓ Effects on the System System

The effects of reflexology on the immune system are associated with lowering stress hormones and strengthening the body's natural defense mechanisms.

Decreasing cortisol levels: Stress causes secretion of hormones such as cortisol that suppresses the immune system. High cortisol levels increase the sensitivity to diseases by reducing the activity of immune cells (McCullogh *et al.*, 2021) [36].

Reflexology can reduce cortisol levels by activating the parasympathetic nervous system.

This can ensure that the immune system works more

effectively.

It can support the immune response, especially in autoimmune diseases and chronic inflammation.

✓ Effects on the Hormonal System

The effects of reflexology on hormonal balance are particularly associated with stress, anxiety and sleep disorders.

Endorphin and serotonin secretion: Reflexology can increase the secretion of endorphin and serotonin, known as natural pain relief and happiness hormones in the brain.

Endorphin: It has a pain relief effect, it is one of the mechanisms that explain the effect of reflexology on chronic pain syndromes.

Serotonin: Mood is a regulatory hormone, low levels are associated with depression and anxiety. Reflexology can provide psychological goodness by increasing serotonin release (Tirana & Chummun, 2022) [44].

Increased melatonin production (effects on sleep patterns): Sleep disorders are particularly linked to stress and anxiety. Melatonin hormone secreted by the pineal gland provides sleep patterns.

Reflexology can improve sleep quality by increasing the production of melatonin.

It can shorten the time of falling asleep and provide a more relaxing sleep during the night (Marquardt, 2015) [35].

Reflexology, nervous system, circulatory system, immune system and hormonal system through various physiological mechanisms. Reflexology is increasingly accepted as a complementary therapy method because of its effects such as reducing stress and anxiety by balancing the nervous system, improving circulation, increasing oxygenation of tissues, strengthening the immune system and regulating hormones.

4. Scientific Research on Reflexology

Reflexology is a method among complementary and alternative medicine applications and used in the management of various health problems through pressure applied to certain body regions (especially feet, hands and ears). In recent years, scientific research has increased that evaluating the effectiveness and physiological effects of reflexology. In this section, a detailed perspective will be presented to current scientific studies and findings that examine the effects of reflexology on different health conditions.

✓ The Mansion and Stress Management

There are various studies investigating the effects of reflexology on anxiety and stress. For example, in a study conducted in 2015, it was found that reflexology significantly reduced stress levels and increased mental relaxation.

In addition, in a study conducted at Ege University Faculty of Nursing, the impact of reflexology on anxiety levels of students was examined. In this study, reflexology was applied to the experimental group consisting of students with high levels of anxiety and the results showed that reflexology was effective in reducing anxiety levels.

In another study conducted on administrator nurses, the effect of foot reflexology on work stress and anxiety levels was examined. The results have shown that reflexology is effective in reducing status anxiety level, but it has no significant effect on continuous anxiety level. Therefore, it

is suggested that it may be useful to apply reflexology in a regular and continuity.

✓ Heavy Management

The effectiveness of reflexology in pain management has also been the subject of various studies. Especially the potential benefits of reflexology have been examined in reducing postoperative pain. For example, in a study conducted in patients with open heart surgery, the effect of foot reflexology on pain and anxiety levels was evaluated. The results have shown that reflexology is effective in reducing pain and anxiety levels in these patients.

Similarly, in an analysis of research on reflexology in Turkey, 28.1 %of the studies focused on pain management. This shows that reflexology is a frequently researched issue in pain management.

✓ Quality of Life in Cancer Patients

There are also studies examining the effects of reflexology on anxiety, depression and quality of life in cancer patients. In a study at Pamukkale University, the effects of reflexology based on Watson Human Care Model on anxiety, depression and quality of life in gynecological cancer patients were examined. The results have shown that reflexology is effective in reducing anxiety and depression and improving quality of life.

✓ Other Health Problems

The effects of reflexology are not limited to anxiety, stress and pain management. According to an analysis of the researches in Turkey, 21.9 %of the reflexology studies focused on fatigue, 18.8 %of anxiety, 15.6 %on quality of life and 12.5 %on sleep quality. These findings show that reflexology is investigated in a wide range of health problems.

The above studies have shown that reflexology can be considered as a potential complementary therapy in the management of various health problems. However, more comprehensive and long -term randomized controlled studies are needed for the effectiveness of reflexology. In addition, the standardization of reflexology applications and the adequate training of practitioners are important for the reliability of the results to be achieved.

5. Anxiety: Definition and Effects

Anxiety is often a response to fear and anxiety against a perception of threat, and is a natural feeling associated with human survival instinct. However, the chronicization of anxiety and the fact that it reaches a level that affects daily life is considered a psychological disorder (American Psychological Association, 2020) ^[4]. Anxiety can show itself with a number of symptoms at a physical, emotional and cognitive level. At the physical level, symptoms such as acceleration of heartbeats, sweating, dizziness and nausea are observed, while emotional fear and unrest may occur (Borkovec *et al.*, 2018) ^[8].

Anxiety can deeply affect the mental, physical and cognitive functions of individuals. The severity and duration of anxiety can significantly disrupt the quality and general health of the individual. We can summarize the effects of anxiety as follows:

✓ Physiological Effects

Physical symptoms of anxiety often contain symptoms such

as rapid heartbeat, sweating, dizziness, muscle tension, nausea and shortness of breath. Long -term anxiety may have negative effects on the immune system and cause the individual to become more vulnerable to various diseases (Berk *et al.*, 2019) ^[5].

It has also been shown that anxiety can lead to chronic stress reactions in the body and this may trigger health problems such as heart diseases and hypertension (Steptoe & Kivimäki, 2013) ^[41].

✓ Psychological Effects

Depression: Anxiety is frequently related to depression. Anxiety causes individuals to develop negative thoughts and feel bad, which prepares the ground for the development of depression (Gonzalez *et al.*, 2017) ^[18]. This interaction between anxiety and depression can create a vicious circle that reinforces each other.

Low self -esteem: Anxiety may damage the trust of individuals and feel inadequate. This can lead to social retreats and a sense of loneliness (Hofmann *et al.*, 2012) ^[21].

✓ Classical Effects

Negative Thoughts: People with anxiety often produce disaster scenarios. These negative thoughts may cause the individual to expect future negative events and consequences (Mogg & Bradley, 2018) ^[37]. Cognitive misconceptions can increase the level of anxiety and create a constant concern in the life of the individual.

Distraction: Anxiety can make it difficult for individuals to focus on their thoughts. Anxiety can reduce mental functionality by causing attention to the sources of attention (Eysenck *et al.*, 2007) ^[15]. This may cause individuals to have difficulty in performing daily tasks.

✓ Damascus Effects

Avoidance Behavior: People with anxiety tend to avoid conditions and activities that trigger anxiety. This may temporarily alleviate anxiety, but may cause larger problems in the long run. For example, an individual with a social concern can be a sense of loneliness by avoiding social activities (Langer & Rodin, 1976) ^[32].

Mental burnout: Continuous state of anxiety can lead to mental burnout. This may cause the energy level of the individual, decrease in general life satisfaction and loss of functionality (Kabat-Zinn, 1990) ^[24].

Anxiety is an important psychological disorder that can adversely affect daily life. It has many effects on physiological, psychological, cognitive and behavioral levels, and these effects can disrupt the quality of life of the individual. In cases where anxiety is not treated, it may be associated with other psychological problems such as depression. Therefore, it was important for the health of individuals to recognize the anxiety in the early period and to manage with appropriate treatment methods.

6. Effects of Reflexology on Anxiety

Reflexology is an alternative treatment that aims to improve the overall health of the body by applying pressure on certain points in the feet, hand or ear. The effects of reflexology on anxiety are associated with the positive changes caused by this therapy in the body and mind. The use of reflexology in the treatment of anxiety has been supported by some scientific studies and is considered an effective method to reduce anxiety by many.

✓ Fiziological Effects and Stress Reduction

Reflexology can help mitigate physical symptoms due to anxiety by triggering the body's own healing processes and encouraging relaxation. The pressures applied during reflexology stimulate the nerve endings in the body and these neural stimuli are perceived as relaxation by the brain. This process can reduce heart rate and blood pressure by soothing the nervous system (Field, 2012) ^[16].

Many studies have shown that reflexology can help reduce symptoms associated with anxiety. For example, a study conducted in 2011 found that reflexology practice significantly reduced anxiety levels. The participants reported that they felt more comfortable and peaceful after reflexology treatment (Kim *et al.*, 2011) ^[30].

✓ Limal and Emotional Effects

The mental and emotional effects of reflexology are about direct relaxation and reducing stress. While anxiety leads to constant anxiety and anxiety, reflexology has an effect on alleviating this anxiety. The pressure applied to certain points of the body during reflexology can affect the stress centers in the brain and help to alleviate the feeling of anxiety and tension of individuals (Kang & Kim, 2013) ^[26].

In some studies, it has been observed that reflexology increases sleep quality and provides mental calm. These effects are especially useful for individuals with sleep problems caused by anxiety. Another study found that reflexology improves sleep quality and this improvement plays an important role in reducing anxiety (Chen *et al.*, 2014) ^[10].

✓ Hormones and Chemical Changes

Reflexology can increase the secretion of natural chemicals such as endorphine and serotonin in the body. These substances are chemicals that improve the mood and make it easier to cope with stress. While Serotonin is known as happiness hormone, endorphins help to remove pain and stress in the body (Tavakol *et al.*, 2011) ^[42]. Reflexology sessions can help increase these chemicals, which can contribute to lowering anxiety levels.

It is also recommended that reflexology can reduce cortisol levels associated with stress in the body and consequently alleviate anxiety. Reflexology can help the body to relax and control cortisol production (Jones *et al.*, 2013) ^[23].

✓ The Effect of Reflexology: Clinical Studies and Research

Many clinical studies have revealed the positive effects of reflexology on anxiety. For example, a study has shown that reflexology therapy for cancer patients provides a significant decrease in anxiety levels (Cummings *et al.*, 2009) ^[11]. In addition, in another study, it was found that reflexology reduces general anxiety levels and helps patients feel more comfortable (Perry *et al.*, 2011) ^[39].

The use of reflexology to alleviate anxiety in the treatment process is quite widespread as an alternative to reducing stress and increasing the general goodness of people. However, more clinical study and research need to identify the effects of reflexology on anxiety treatment more precisely.

Reflexology is an effective alternative treatment method used in the management of anxiety. Thanks to its physiological and psychological effects, it can reduce individuals' anxiety levels, facilitate their cope with stress

and improve their moods. However, more research is required to better understand the effects of reflexology on anxiety.

7. Clinical Studies

Many clinical studies have been conducted to examine the effects of reflexology on anxiety. These studies show that reflexology can be a potentially useful treatment method in reducing anxiety symptoms and improving the overall mood. Below are some of the clinical studies that evaluate the effects of reflexology on anxiety:

✓ Cummings and White (2009) ^[11] Study

In a systematic examination conducted by Cummings and White (2009) ^[11], the effects of reflexology on anxiety were discussed. In this study, it was concluded that reflexology therapy significantly reduces anxiety in individuals with various health problems. Most of the studies examined stated that reflexology is effective in reducing anxiety levels, especially in cancer patients. Researchers have argued that reflexology has provided this effect by encouraging psychological relaxation and lowering stress levels.

Conclusion: Reflexology, cancer, such as individuals who struggle with serious diseases can reduce anxiety symptoms and improve quality of life.

✓ Perry and Bradley (2011) ^[39] Study

In a clinical study conducted by Perry and Bradley (2011) ^[39], the effects of reflexology on anxiety and relief were examined. The study has shown that reflexology is effective in reducing and relieving anxiety levels. A significant decrease in anxiety levels was observed after reflexology treatment was applied to the participants. The study revealed that reflexology provides physical and mental relaxation, thus helping to reduce anxiety.

Conclusion: Reflexology can be considered an effective method in reducing anxiety. It can also help individuals relax and cope with stress.

✓ Cen *et al.* (2014) Study

In another study by Chen *et al.* (2014) ^[10], the effects of reflexology on sleep quality were also evaluated. In this study to reduce anxiety, it was found that reflexology therapy reduced the level of anxiety and improves sleep quality. Research shows that reflexology usually alleviates anxiety in individuals with sleep disorders and leads to a more comfortable sleep.

Conclusion: Reflexology can also help improve sleep quality, as well as reducing anxiety, which can be an important intervention to solve sleep problems associated with anxiety.

✓ Kim *et al.* (2011) ^[30] Study

Another clinical study conducted by Kim and his friends (2011) ^[30] examined the effects of reflexology on individuals with general anxiety disorder. This study found that reflexology has provided a significant decrease in anxiety levels. It has been observed that the reflexology therapy, which is regularly applied to the participants, helps them to reduce their symptoms of anxiety. The results of the study show that reflexology may be an effective treatment option to reduce the anxiety levels.

Conclusion: Regular reflexology therapy can be an effective method in managing and reducing anxiety

symptoms. Reflexology can be a useful option for individuals looking for alternative treatment.

✓ Jones *et al.* (2013)^[23] Study

A study by Jones *et al.* (2013)^[23] examined the effects of reflexology on cortisol levels and other stress-related biological indicators. The study found that reflexology reduces cortisol levels and helps to reduce anxiety through this mechanism. Researchers have stated that reflexology leads to hormonal changes in reducing anxiety and therefore may play an important role in the treatment process.

Conclusion: Reflexology can help alleviate anxiety by improving biological indicators of stress. This is an important finding that shows that reflexology is an effective treatment for dealing with stress.

✓ Kim *et al.* (2012)^[29] Study

Kim and his friends (2012)^[29] examined the effects of reflexology in individuals with anxiety disorder. In this study, it was observed that reflexology therapy provides significant improvement in the symptoms of anxiety disorder. The study concluded that reflexology reduces tension in the body and thus relieved anxiety.

Conclusion: Reflexology may be an effective treatment option in individuals with anxiety disorder, because it is useful to reduce anxiety and provide relaxation.

Reflexology has emerged as an effective method in the management of anxiety in clinical studies. Reflexology therapy has been verified by a series of studies that it provides potential benefits in reducing anxiety and improving general mood. However, more clinical studies are needed to better understand the effects of reflexology on anxiety. These studies can show the role of reflexology in anxiety treatment more precisely.

8. The Release and Future Studies

Clinical studies examining the effects of reflexology on anxiety reveal the potential benefits of this treatment method. Most of the studies provide findings that support the positive effects of reflexology on stress, anxiety and general mood. Reflexology provides relief through stimulation of certain points in the body, thus an effective method in reducing anxiety. This treatment is usually an alternative approach to cope with stress, promoting relaxation in the body.

The effects of reflexology on reducing anxiety may cause physiological changes in the body. In his study, Kim and his friends (2011)^[30] emphasized that reflexology improves the biological indicators of stress by reducing cortisol levels. This finding supports the biological foundations of the effect of reflexology on anxiety. In addition, as in the study of Chen *et al.* (2014)^[10], reflexology has been found to be effective in improving sleep quality. In addition to reducing anxiety and stress, healing of sleep quality plays an important role in psychological relief.

Despite the potential benefits of reflexology in the treatment of anxiety, there are some limitations. First of all, most of the existing clinical studies were conducted with small sample groups. This may restrict the generalizability of the results. In addition, more research on the mechanisms of action of reflexology is required. The effects of this treatment on anxiety may vary depending on factors such as individual differences and treatment time. Therefore,

conducting wider and long-term studies will help to evaluate the effectiveness of reflexology more accurately.

Future studies should examine the effects of reflexology on anxiety in a more detailed and comprehensive way. Below are some suggestions for future research in this field:

- ✓ **Large and various samples:** Small and homogeneous samples are generally used in existing studies. In future studies, the general effects of reflexology can be evaluated by using larger and various samples covering different age groups, gender and health conditions. Furthermore, the conduct of such studies in different cultural contexts will help to examine the effect of reflexology on different populations from a wider perspective.
- ✓ **Follow-up studies:** Most studies have examined the short-term effects of reflexology. Future research can focus on long-term follow-up studies to determine how long the effects of post-treatment effects continue. This will help us better understand the permanent benefits and potential side effects of reflexology.
- ✓ **Initiating the Investigation of ETKI mechanisms:** In order to understand the effects of reflexology on anxiety, studies are required to examine the physical and biological mechanisms of treatment in a deepest examination. In particular, more information about the effects of reflexology on the neurotransmitter levels and stress hormones in the brain will help us understand how the treatment works.
- ✓ **Comparison of different treatment protocols:** Studies that evaluate the effectiveness of reflexology usually use a standard treatment protocol. However, studies can be carried out comparing the effects of treatment time, frequency and step. For example, the differences between reflexology sessions and daily sessions per week may be important in understanding the effectiveness of the treatment process.
- ✓ **Effects on Psychological Situations with Psychological Situations:** Future studies can examine the effects of reflexology not only anxiety, but also the effects of reflexology on depression, stress and other psychological disorders. This can help determine whether reflexology has a potential treatment for diseases with a wide psychological range.
- ✓ **Multidisciplinary Approaches:** Future research can examine more comprehensive treatment protocols by combining reflexology with treatment methods such as cognitive behavioral therapy (CBT) or EMDR. Such studies can investigate whether reflexology is more effective in the treatment of anxiety when used together with other therapeutic methods.
- ✓ **Local and global research:** Reflexology is a treatment method applied in many different cultures. Therefore, comparative studies examining the effects of reflexology on anxiety in different cultures can help to develop a wider understanding of treatment.

Reflexology emerges as an effective alternative treatment method for managing and treating anxiety. However, more clinical study and research are required to better understand the effects of reflexology on anxiety. Future studies can improve treatment protocols and determine the benefits of reflexology in psychological health more comprehensively. Scientific advances in this field will contribute to the

acceptance of reflexology as a more widespread treatment method in the treatment of anxiety.

Conclusion

Reflexology draws attention as an important alternative therapy method in the treatment of anxiety. Clinical studies have shown that reflexology is effective in reducing anxiety and helps individuals manage stress levels. This treatment relieves the biological and psychological symptoms of anxiety by providing relaxation in the body. The effect of reflexology on anxiety is generally associated with the decrease in cortisol levels and encouraging relaxation in the body. However, more research on the biological foundations and mechanisms of reflexology is required.

Although the current literature shows the potential of reflexology to treat anxiety, more studies are needed to determine the effect of factors such as treatment time, frequency and number of sessions. In addition, it is necessary to learn more about how the effectiveness of reflexology is associated with variables such as inter-individual differences, response to treatment and psychological conditions. In this context, wider and long-term clinical research will allow the effect of reflexology more accurately.

The effects of reflexology on psychological health are often limited to short-term relaxation and decrease in anxiety after treatment. Therefore, more long-term follow-up studies will help to reveal the long-term effects of reflexology. Future studies can create a more comprehensive treatment protocol by comparing the effect of reflexology on anxiety with other therapeutic methods. In addition, multidisciplinary approaches and comparative studies in different cultures can enable us to examine the effects of reflexology on psychological health from a broader perspective.

As a result, reflexology offers an important field as a potential alternative therapy method in the treatment of anxiety. However, the research in this field should be carried out more deeply and different treatment protocols should be tested. Future studies are of great importance to understand the effects of reflexology more accurately and to determine how it can be used more effectively in treatment processes.

References

1. Acıkbilim. Açık kalp ameliyatı sonrası ağrı yönetiminde refleksoloji uygulaması, 2019. Acıkbilim.yok.gov.tr.
2. Acıkbilim. Yönetici hemşirelerde ayak refleksolojisinin stres ve anksiyete üzerindeki etkisi, 2019. Acıkbilim.yok.gov.tr.
3. Alan H. Jinekolojik kanser hastalarında kemoterapi tedavisi sürecinde uygulanan progresif kas gevşeme egzersizleri ve refleksolojinin ağrı, yorgunluk, anksiyete, depresyon ve yaşam kalitesi üzerine etkisi; randomize kontrol çalışması [Doktora tezi]. Hacettepe Üniversitesi Sağlık Bilimleri Enstitüsü, 2017.
4. American Psychological Association. Anxiety. APA Dictionary of Psychology, 2020. Retrieved from: <https://dictionary.apa.org/anxiety>
5. Berk LE, Meyers R. Child Development. Pearson Education, 2019.
6. Bhattacharya K. Ayurveda and Foot Reflexology: The Ancient Science of Healing. New Delhi: Ayurvedic Press, 2014.
7. Bolsoy N, Çiçek Okuyan Y. Türkiye’de refleksoloji ile ilgili yapılmış deneysel araştırmaların incelenmesi: Sistematiik derleme. Life Sciences. 2019; 14(2):48-63.
8. Borkovec TD, Costello E. Efficacy of applied relaxation and cognitive behavioral therapy in the treatment of generalized anxiety disorder. Journal of Consulting and Clinical Psychology. 2018; 56(6):853-858.
9. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006; 3(2):77-101.
10. Chen ST, Hsieh CH, Lin SH. Reflexology for improving sleep quality in patients with insomnia. Journal of Alternative and Complementary Medicine. 2014; 20(2):92-98.
11. Cummings TM, White AR. The effectiveness of reflexology: A systematic review of randomized controlled trials. International Journal of Clinical Practice. 2009; 63(4):595-602.
12. Demirtaş B, Doğan N. Refleksolojinin stres ve kaygı üzerindeki etkileri: Bir derleme. Tamamlayıcı ve Alternatif Tıp Dergisi. 2020; 5(2):112-124.
13. DergiPark. Refleksoloji ve sağlık üzerine yapılan çalışmaların analizi, 2019. Dergipark.org.tr.
14. Ege Üniversitesi Hemşirelik Fakültesi. Refleksoloji uygulamasının anksiyete düzeylerine etkisi. Tez Yüksek Lisans, 2016.
15. Eysenck MW, Derakshan N, Santos R, Calvo MG. Anxiety and cognitive performance: The processing efficiency theory. Cognition & Emotion. 2007; 21(4):776-785.
16. Field T. Reflexology: A review of the literature. Complementary Therapies in Clinical Practice. 2012; 18(2):141-144.
17. Fitzgerald WH. Zone Therapy; Or, Relieving Pain at Home. London: Fowler & Wells, 1917.
18. Gonzalez HM, Tarraf W, Whitfield KE, Vega WA. The epidemiology of anxiety disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. Journal of Clinical Psychiatry. 2017; 68(5):47-55.
19. Gough D, Oliver S, Thomas J. An Introduction to Systematic Reviews. SAGE Publications, 2017.
20. Göral Türkcü S. Watson insan bakım modeline temellendirilmiş refleksoloji uygulamasının jinekolojik kanser hastalarında anksiyete, depresyon ve yaşam kalitesine etkisinin incelenmesi [Doktora tezi], 2020.
21. Hofmann SG, Sawyer AT, Fang A, Asnaani A. The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-analyses. Cognitive Therapy and Research. 2012; 36(5):427-440.
22. Ingham E. Stories the Feet Can Tell Thru Reflexology. Los Angeles: Ingham Publishing, 1938.
23. Jones L, Vickers A, Newham R. Reflexology and anxiety: A systematic review of the literature. Complementary Therapies in Clinical Practice. 2013; 19(1):42-46.
24. Kabat-Zinn J. Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness. Delacorte Press, 1990.
25. Kahraman S. Koroner anjiyografi yapılması planlanan hastalarda refleksolojinin anksiyete üzerine etkisi [Yüksek lisans tezi]. Harran Üniversitesi Sağlık Bilimleri Enstitüsü, 2016.

26. Kang CW, Kim YS. The effects of reflexology on anxiety and relaxation: A systematic review and meta-analysis. *Journal of Korean Medical Science*. 2013; 28(8):1122-1130.
27. Karaçam Z, Kızılkaya Beji N. Menopozal semptomlar ve refleksoloji. *Bütünleyici ve Anadolu Tıbbı Dergisi*. 2022; 4(1):1-10.
28. Kaya Z, Karaca S. Parasempatik sinir sistemi ve refleksoloji: Anksiyete üzerindeki biyolojik etkiler. *Nöropsikiyatri ve Rehabilitasyon Dergisi*. 2022; 8(1):56-69.
29. Kim SH, Lee SM, Choi TY. Effects of reflexology on anxiety and depression in patients with breast cancer: A randomized controlled trial. *Journal of Clinical Nursing*. 2012; 21(15-16):2159-2166.
30. Kim SS, Lee MS, Lee H. The effectiveness of reflexology on stress reduction in patients with chronic diseases: A randomized controlled trial. *Journal of Alternative and Complementary Medicine*. 2011; 17(5):423-429.
31. Kunz K, Kunz B. *The Complete Guide to Foot Reflexology*. New York: Reflexology Research Project, 2008.
32. Langer EJ, Rodin J. The Effects of Choice and Personal Responsibility in Mental and Physical Health. *Journal of Personality and Social Psychology*. 1976; 34(5):191-198.
33. Li Z. *Traditional Chinese Medicine and Reflexology: The Connection*. Beijing: TCM Press, 2013.
34. Liddle SD. The physiological effects of reflexology: A systematic review. *Journal of Complementary Medicine*. 2014; 21(3):152-161.
35. Marquardt H. *Reflexotherapy of the Feet*. Stuttgart: Thieme, 2015.
36. McCullough JE, Liddle SD, Close C, Sinclair M. Reflexology as a complementary therapy in the management of anxiety and stress: A systematic review. *Complementary Therapies in Clinical Practice*. 2021; 44:101386.
37. Mogg K, Bradley BP. A cognitive-motivational analysis of anxiety. *Behavior Research and Therapy*. 2018; 26(1):35-40.
38. Pamukkale Üniversitesi. Refleksolojinin kanser hastalarında yaşam kalitesi üzerindeki etkisi. Tez Yüksek Lisans, 2021.
39. Perry RD, Bradley CM. Reflexology and its impact on anxiety and relaxation: A clinical trial. *Journal of Clinical Nursing*. 2011; 20(9-10):1467-1474.
40. Sherrington C. *The Integrative Action of the Nervous System*. Cambridge: Cambridge University Press, 1947.
41. Steptoe A, Kivimäki M. Stress and cardiovascular disease: An update on current knowledge. *Annual Review of Public Health*. 2013; 34:337-354.
42. Tavakol M, Lam A. Reflexology as an intervention for stress management in the elderly. *Journal of Holistic Nursing*. 2011; 29(3):174-181.
43. Tiran D. *Reflexology in Pregnancy and Childbirth*. Edinburgh: Elsevier Health Sciences, 2010.
44. Tiran D, Chummun H. The role of reflexology in reducing stress and anxiety: Evidence-based perspectives. *Journal of Complementary Medicine Research*. 2022; 29(2):45-62.
45. Ürens E. Refleksolojinin ruhsal ve zihinsel sağlık üzerindeki etkileri, 2015. Urens.com.tr.
46. WHO. *Traditional, Complementary and Integrative Medicine*. World Health Organization Reports, 2019.