

Intervention of Virtual Reality on Mental Health

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ABSTRACT

Virtual Reality (VR) is quickly becoming a game-changing technology for treating mental health issues. Virtual reality (VR) enables people to safely and engagingly confront and manage their psychological difficulties by creating immersive and regulated environments. This study investigates how virtual reality can be used to treat illnesses like depression, phobias, anxiety disorders, and post-traumatic stress disorder (PTSD). It provides a special fusion of customization and real-time feedback, it demonstrates the promise of virtual reality for exposure treatment, relaxation training, and cognitive rehabilitation. The technology is positioned as a promising addition to conventional therapy techniques because of its capacity to mimic real-world situations and offer customized therapeutic experiences. Notwithstanding its advantages, issues including cost, accessibility, and the requirement for further empirical support still exist. Utilizing virtual reality in mental health care develops more efficient, scalable, and inclusive therapeutic solutions, this study highlights the significance of interdisciplinary collaboration.

Keywords: Mental Health, Virtual Reality, depression, phobia, anxiety disorders, post-traumatic stress disorder.

INTRODUCTION

Emotional, psychological, and social well-being are all included in mental health, which influences people's thoughts, feelings, and behaviors. Due to social isolation, depression stress, and post-traumatic stress disorder (PTSD) have become more common in recent years. These issues not only affect people but

also put a burden on economies and healthcare systems. The prevalence of mental health problems has significantly increased over the past decade, which is indicative of both greater awareness and growing influence of personal and societal concerns. About 14% of teenagers and about one billion individuals globally suffered from a mental illness in

2019. Globally, disorders like anxiety and depression continue to be the main causes of disability. These problems were made worse by the COVID-19 pandemic, which increased the number of cases of anxiety and depression by more than 25% in its first year.

Psychotherapy, medicine, mindfulness exercises, and lifestyle modifications are examples of traditional approaches to mental health. Although many people have found success with these methods, they frequently have drawbacks, including difficulty in replicating real-life triggers or circumstances in controlled therapeutic environments, high prices, and accessibility issues. These methods have encountered major obstacles in terms of accessibility and coverage worldwide throughout the last ten years. Treatment gaps still exist despite their demonstrated efficacy: up to 90% of people in low- and middle-income countries and up to 50% of people in high-income countries lack access to mental health care.

One innovative technique that overcomes these constraints is Virtual Reality (VR), which offers engaging and interactive therapeutic environments. With VR, therapists may construct realistic exposure treatment settings, provide stress-reduction relaxing experiences, and design interactive tools to help people with mental health issues strengthen their skills. Studies have proven that the involvement of VR can speed up treatment results, increase patient involvement, and provide a secure environment for facing anxieties and rehearsing coping mechanisms.

LITERATURE REVIEW:

Liana Spytka (2024) examines the application of virtual reality (VR) technology in treating phobias and post-traumatic stress disorder (PTSD). The study reveals several significant findings such as, primary treatment approaches combine cognitive behavioral therapy (CBT) and exposure therapy, VR enables controlled exposure to stressful stimuli in a safe environment and Treatment can be individually

tailored through customized virtual environments. The core benefits identified were a secure environment for exposure therapy, the ability to create precise, controlled simulations, gradual desensitization capabilities, and customizable treatment intensity clinical application that allows systematic desensitization to phobic triggers and incorporates multiple therapeutic approaches. The methodology used to develop this paper is analytical analysis, comparative analysis, and systematization methods.

Imogen H. Bell, Clin Psych; Jennifer Nicholas, Mario Alvarez-Jimenez, Andrew Thompson, Lucia Valmaggia (2020) focus on recent meta-analyses and systematic reviews that provided strong evidence for VR's effectiveness, in PTSD and its treatment with traditional therapeutic approaches. The success can be attributed to the physiological changes consistent with emotional responses, authentic reactions to fear, anxiety, and stress, and physiological indicators during treatment. The study was limited to a complete evaluation of the research's validity and reliability.

Rishikeshava Damarla (2022) discusses the application of virtual reality (VR) in the treatment of psychological disorders, highlighting its growing role in mental healthcare. It is initially used for entertainment, and therapeutic applications, leveraging its immersive nature to address phobias, anxiety disorders, post-traumatic stress disorder (PTSD), and other psychological conditions. Advanced VR applications simulate real-life scenarios for diagnosis and assessment, aiding in understanding patient behavior. The limitations were high costs and the need for specialized training, immersive environments may worsen symptoms for some patients, and ethical concerns and a lack of standardized guidelines remain challenges. The paper emphasizes VR's potential to revolutionize mental health care while addressing the challenges associated with its implementation.

DISCUSSION

DEPRESSION:

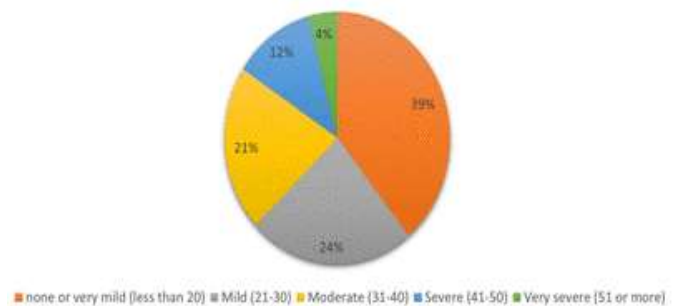
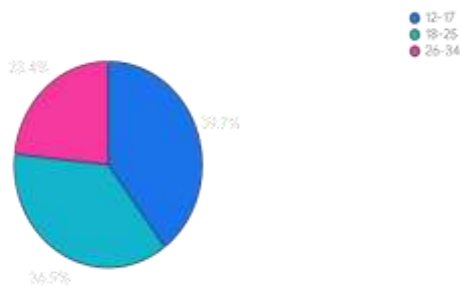
Depression is a common but dangerous mental health illness that affects a person's mood, thinking, and behavior, frequently resulting in persistent feelings of sadness, hopelessness, and disinterest in everyday activities. It can also induce physical symptoms like hunger changes, sleep disruptions, exhaustion, and difficulties concentrating. The illness could be caused by a mix of genetic, biological, environmental, and psychological causes, such as stressful life experiences, trauma, or chemical imbalances in the brain. Depression can take many different forms, including Major Depressive Disorder, Persistent Depressive Disorder, and Seasonal Affective Disorder, among others. Psychotherapy, medication, lifestyle changes, and family support are common treatment choices that help people manage symptoms and enhance their quality of life. Seeking professional help is critical when depression starts interfering with daily activities, since early intervention can lead to better recovery results. It's more than simply a fleeting feeling of grief; it's a significant disease that frequently requires assistance and therapy. According to a 2022 study looking at 2015 through 2020, the rates of depression increased as follows.

Ages	2015	2020
12-17	12.7%	16.9%
18-25	10.3%	17.2%
26-34	7.5%	9.9%

ANXIETY DISORDERS:

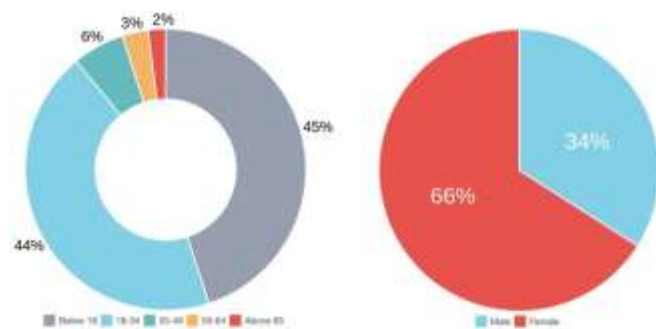
Anxiety disorders are a collection of mental health diseases marked by excessive dread, worry, or uneasiness that can interfere with daily activities. They include Generalized Anxiety Disorder (GAD), which is characterized by chronic and excessive worry about everyday situations; Panic Disorder, which is characterized by sudden and intense panic attacks; Social Anxiety Disorder, which causes extreme fear of social situations; and Specific Phobias, in which individuals experience overwhelming fear of specific objects or situations. Anxiety disorders can be caused by a variety of genetic, biological, psychological, and environmental factors, including stress, trauma, or chemical imbalances in the brain. Common symptoms include restlessness, a fast heartbeat, perspiration, difficulty concentrating, and sleep difficulties. Treatment often consists of Cognitive Behavioral Therapy (CBT), medication such as antidepressants or anti-anxiety medications, and lifestyle adjustments such as relaxation techniques, exercise, and stress management. Seeking professional help is critical when anxiety becomes persistent and interferes with daily living, since effective therapies can help people regain control and enhance their well-being. Almost 30% of adults will experience them at some point throughout their lives. Nonetheless, some psychotherapy approaches can be used to treat anxiety problems. The following pie chart shows the percentage of people who are suffering from different levels of anxiety.

Average Percentage by Age Group



PHOBIAS:

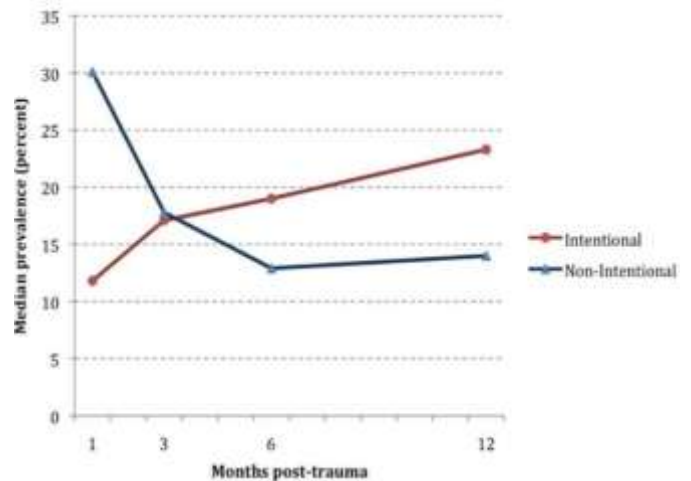
Phobias are acute, irrational dread about specific items, circumstances, or activities that can cause severe suffering and disrupt daily life. They are a type of anxiety disorder that is divided into three categories: specific phobias (fear of heights, spiders, or enclosed spaces), social phobia (extreme fear of social situations), and agoraphobia (fear of being in situations where escape is difficult, such as crowded places or open spaces). Phobias are often caused by a combination of hereditary, environmental, and psychological variables, which can be triggered by traumatic experiences. Extreme anxiety, rapid heartbeat, perspiration, dizziness, and an intense desire to escape the frightened thing or circumstance are some of the symptoms. Treatment options for anxiety symptoms include exposure therapy, cognitive-behavioral therapy (CBT), and, in some situations, medication. Individuals who receive effective treatment can learn to manage their fears and decrease the burden of phobias on their daily life. Below are the percentages of people suffering from various phobias categorized according to their age and gender.



POST-TRAUMATIC STRESS DISORDER (PTSD):

Post-Traumatic Stress Disorder (PTSD) is a mental health illness caused by experiencing or witnessing a traumatic event, such as natural disasters, accidents, war, abuse, or violence. It is distinguished by intrusive memories, flashbacks, nightmares, intense anxiety, and emotional anguish when reminded of the

trauma. Individuals with PTSD may exhibit avoidance tendencies, emotional numbness, anger, difficulty sleeping, and hypervigilance. The illness has a substantial impact on daily living, relationships, and overall well-being. PTSD is caused by a combination of psychological, biological, and environmental variables, with some persons being predisposed owing to genetics or prior trauma. Psychotherapy, such as Cognitive Behavioral Therapy (CBT) or Eye Movement Desensitization and Reprocessing (EMDR), is commonly used in conjunction with antidepressant medication to control symptoms. Support from loved ones, self-care routines, and stress management strategies can all help people cope and heal. Early intervention and expert help are critical in improving the quality of life for persons suffering with PTSD. Studies show that there are many cases where people suffer from these disorders.



UTILIZING VIRTUAL REALITY:

The world has seen a surge in interest in the use of virtual reality technology in a variety of fields, including mental health treatment. Immersive virtual worlds have the potential to transform the way we approach psychological interventions, providing a fresh and interesting way to address mental health concerns such as anxiety, depression, and even psychosis. The current condition of mental health care is marked by a considerable disparity between the increasing frequency of mental health problems

and the availability of accessible, inexpensive, and stigma-free treatment alternatives. Virtual reality offers a viable solution to this problem since it can deliver tailored, engaging, and effective therapy to a larger population.

- **AVATAR-BASED THERAPY:**

Depression, a vulnerability, can be reduced by practicing self-compassion. Virtual reality interventions promote self-compassion rather than reducing self-criticism. An avatar is a virtual identity that anyone can acquire. They were advised to be critical of themselves while being sympathetic. Self-criticism reduces as self-compassion increases, lessening the risk of developing depression. The therapist and patient create a digital avatar that symbolizes the source of suffering. In situations of schizophrenia, the avatar formed may mimic the voice that the patient hears, including its looks and tone. Patients can speak with avatars in a safe, controlled setting, and therapists can manage the avatar's reactions. This technique helps people who may struggle with traditional face-to-face treatment to participate.

- **COGNITIVE BEHAVIORAL THERAPY:**

Cognitive behavioral therapy (CBT) is a common treatment for depression, anxiety, phobias, and a variety of other mental health concerns. Numerous guidelines recommend it as the first-line treatment for anxiety and mood disorders. Cognitive behavioral therapy (CBT) is a type of psychotherapy that teaches patients how to identify and change harmful or upsetting thinking processes that affect their emotions and behavior. It has been shown to help patients effectively overcome a variety of mental health conditions, including anxiety and depression, and is the therapy with the most scientific evidence. The therapist assists the patient in identifying inaccurate or unhelpful thought processes that contribute to emotional suffering. The therapist provides skills for challenging irrational beliefs and replacing them with more balanced, realistic ideas.

According to research, cognitive behavioral therapy can be as helpful as medication for a variety of illnesses, particularly anxiety and depression. Patients are urged to gradually confront their concerns or engage in positive habits that promote healthier thinking. CBT offers relaxation methods, mindfulness, and problem-solving skills to help people manage stress and emotions.

- **VIRTUAL REALITY EXPOSURE THERAPY:**

Virtual Reality Exposure Therapy (VRET) is a cutting-edge psychiatric treatment that uses immersive virtual reality (VR) technology to expose patients to anxiety-inducing circumstances in a safe and controlled setting. It works very well for treating phobias, PTSD, social anxiety, OCD, and other anxiety disorders. The therapist assesses the patient's worries, anxieties, or traumas, then creates a virtual environment to recreate the feared scenarios. Patients engage with the virtual environment, beginning with light exposure and progressing to more severe scenarios. The idea is to desensitize the person to their fear through repeated sessions. Patients use relaxation strategies like deep breathing and mindfulness to alleviate their anxiety. Real-life circumstances gradually become less upsetting, boosting emotional regulation and confidence. It can be operated remotely for patients who are unable to participate in in-person therapy. Some studies imply that VR therapy reduces symptoms faster than traditional exposure therapy since it relies on patients picturing the circumstances, whereas VR feels more genuine, making it more effective. Cognitive behavioral therapy is a larger approach that does not rely on VR. It focuses on mental processes, emotions, and actions through scheduled treatment sessions. VRET, on the other hand, is a subset of CBT that focuses on exposure therapy and employs virtual reality to help people confront their anxieties in a controlled, simulated setting. VRET is better suited for exposure-based treatments, whereas CBT is more adaptable and applicable to a wide range of mental

health issues. Furthermore, VRET is considered less frightening than IVE therapy according to the patients.

- **GRADED EXPOSURE THERAPY:**

Graded exposure therapy can help phobics change the way they react to the source of their fear. They are gradually introduced to the source of their phobia in a series of progressive steps. The physician, therapist, or counsellor helps the person with a phobia discover other techniques to understanding and responding to the source of their phobia. The therapist and patient rank anxiety-provoking circumstances from least to most distressing. The patient begins with low-anxiety settings and works their way up. They stay in the scenario until the anxiousness naturally subsides. The therapist assists the patient in overcoming unjustified concerns and developing coping abilities. For example, someone who is afraid of public speaking may engage in positive self-talk before to speaking. As the patient's confidence grows, they advance to the next level in the hierarchy. Graded Exposure Therapy involves only real-world exposure, but VRET offers a virtual alternative for gradual exposure. CBT is a broader approach that emphasizes cognitive patterns, emotions, and coping techniques rather than direct exposure.

- **MODELLING:**

Modelling is also known as observational or vicarious learning. It is a behavioral therapy strategy that teaches people new skills, behaviors, or coping mechanisms by observing others. It is based on social learning theory, which states that people can learn by seeing and imitating the activities of others rather than having firsthand experience. The patient observes a model performing a desired activity, mentally processes it, and understands how and why it works. The therapist may discuss the behavior and break it down into steps so that it is easier to duplicate. The patient imitates the modeled behavior in real life, beginning with low-pressure scenarios and then increasing them until he or she is able to overcome

the constraints. When developing a virtual environment for phobia treatment, image quality, interoperability, and seamless implementation across a variety of platforms are very critical. As a result, output software should be compatible with both regular desktop computers and laptops (at the patient's home or the psychotherapist's office) and virtual reality-specific equipment. It is compatible with various therapies such as CBT, exposure therapy, and virtual reality therapy.

One of the key advantages of utilizing virtual reality (VR) for exposure therapy is the ability to give patients a more immersive and interesting experience. Conventional exposure therapy can be monotonous and repetitive, which lowers motivation and causes disengagement. Virtual reality has the potential to offer a more personalized and engaging experience for each patient, increasing the efficacy and enjoyment of therapy. The ability to tailor VR for exposure therapy to each patient's unique requirements is an additional advantage. A virtual audience that is customized to meet their needs, for instance, can be shown to a patient who is afraid of public speaking. Depending on how nervous they are, they can practice speaking in front of a large or small group of people. Additionally, therapists have more control over the stimuli that patients are exposed to when using virtual reality (VR) for exposure therapy. The virtual surroundings can be altered by therapists to create situations that are difficult for each patient but doable. Additionally, they can keep an eye on how patients react to stimuli and modify the treatment as necessary. Finally, using VR for exposure therapy can also reduce the cost and time required for treatment. Traditional exposure therapy can be time-consuming and expensive, requiring patients to travel to therapy sessions and access the necessary stimuli. VR can be used remotely, allowing patients to access therapy from the comfort of their own homes.

CONCLUSION:

The use of Virtual Reality (VR) in mental health treatment has transformed therapy approaches by delivering immersive, regulated, and effective interventions for a variety of psychiatric conditions. VR-based therapies, including Virtual Reality Exposure Therapy (VRET), cognitive rehabilitation, and relaxation-based therapy, have demonstrated promising outcomes in the treatment of phobias, PTSD, anxiety, depression, and cognitive impairment. VR provides a secure and customisable environment in which individuals can address concerns, develop coping techniques, and improve emotional regulation in a more engaging and participatory manner than traditional treatment methods. Despite its obvious advantages, issues like as high costs, accessibility, and ethical problems must be solved before broad usage. Future research and technical breakthroughs will improve VR applications, making them more inexpensive, usable, and evidence-based. As VR evolves, it has enormous potential to bridge gaps in mental health care by providing tailored, scalable, and effective solutions to individuals worldwide.

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