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Effects of Physiotherapeutic Exercises on Neuropsychiatric Disorders

Mili Sharma[1*], Apoorva Tiwari[2]
[1]BPT Student, Department of Physiotherapy, Sharda University, Greater Noida, India
[2]Assistant Professor, Department of Physiotherapy, Sharda University, Greater Noida, India

***Abstract*: Background: Bipolar disorder, depression, anxiety disorders, schizophrenia, depression, and neurocognitive disorders are only a few of the illnesses that fall within the broad category of neuropsychiatric disorders. These conditions negatively affect people's quality of life and everyday functioning, which has a substantial impact on their well-being. The role of physiotherapeutic activities as supplementary or independent treatments for neuropsychiatric diseases is gaining attention, despite the widespread use of pharmaceutical interventions. Objective: By combining data from previous studies, this review of the literature seeks to investigate how physiotherapeutic activities affect neuropsychiatric illnesses. In particular, the evaluation will evaluate how well various physiotherapy exercise regimens work to improve functional outcomes and symptoms in people with neuropsychiatric illnesses. Design: A literature review. Literature search: PubMed, Google scholar, Science direct, Sci hub. Result: Cognitive behavioral therapy and aerobic exercise combined with resistance training are practically more effective in improving neuropsychiatric conditions. it is also beneficial in improving post traumatic disorders, muscle anxiety and frontal lobe syndrome. This combination has a very potential and effective result along with music therapy, yoga, meditation and aerobic exercise. Conclusion: Physiotherapy activities have the potential to significantly improve functional results and symptoms in people with neuropsychiatric illnesses. To determine the best exercise regimens and mechanisms of action, more investigation is required.**

***Keywords*: neuropsychiatry, anxiety, depression, schizophrenia, stroke, seizure.**

1. Introduction

A branch of psychiatry that emphasize the functional or organic disorders of the central nervous system that cause, contribute to, or are associated with mental and emotional disorders, as well as the somatic substructure that underlies mental manipulation and emotions [1].

Disorders under this domain have high prevalence. Genetic technology, pathology and architecture behind major neuropsychiatric disorders are vital to develop and create an effective treatment protocol and planning further needed interventions. It has been speculated that these disorders may reflect alterations in brain functions. According to research, persistent changes in behavior or feelings may also result in chronic changes in brain's functional anatomy, just as a change in the brain might affect a person's mental state or behavior [2].

CBT- For post-stroke depression, anxiety, pain management, schizophrenia, bipolar disorders and insomnia, cognitive behavioural therapy has been used extensively. CBT is combined for antidepressant for PSD. CBT is connected with a decreased recurrence rate and a lack of negative effects when compared to pharmaceutical treatment. CBT is one element of multidisciplinary approach and emphasize the importance of cognition and behavior in maintaining the disorder. Mal-cognition such as dis-functional automatic thoughts, somatic interpretation and illness beliefs are challenged in a bid to modify behavior. Techniques such as muscle relaxation and psycho education may be employed to help correct mal-adaptive patterns of symptoms formation and maintenance [14]. Various neuropsychiatric disorders are traumatic brain injury, attention deficit hyperactivity disorder (ADHD), schizophrenia, depression, anxiety, seizures, migraine, headache, epilepsy, eating disorder, cognitive deficit disorder. Traumatic brain injury is the disruption in brain function that is due to an outside force. It reflects numerous underlying injuries including extrinsic compression from mass lesion, contusion, diffuse axonal injury (DAI), ischemia and mitochondrial disorder [3]. Worldwide it is estimated that 69 million people experience TBI each year. Africa and Southeast Asia have the highest incidence of traumatic brain injury (TBI) caused by auto accidents (both 56%) while the lowest rates were in North America (25%). Low- and middle-income countries experience about three times more TBI than 11 high income countries. Africa has the lowest incidence of TBI followed by Europe and North America. Attention deficit hyperactivity disorder is a behavioral disease which incorporates hyperactivity, impulsivity. This is characterized as cognitive, motor, perceptual and behavioral disorder. ADHD patient have trouble with sleep and anxiety [4]. According to an epidemiological survey of ADHD based on studies carried out between 2009 and 2019, the point prevalence of ADHD among children and adolescents ranged from 1.30% to 28.9% [5].

Schizophrenia is an extreme intellectual illness. The function of cortical excitatory inhibitory imbalance within side the improvement of cognitive and poor signs and symptoms and the function of psychosocial stressors, psychological elements and sub dopamine disorder in the onset of fine signs and symptoms of the disease. The idea that men have a larger lifetime risk of

*Corresponding author: milisharma1999@gmail.com

acquiring schizophrenia that woman has been supported by recent meta-analyses [6]. Males are at a 1.4 times higher relative risk than females. The prevalence of schizophrenia was 15.2/100,000 people on average [47]. Depression is a chronic feeling of emptiness, sadness or inability to feel pleasure that may appear to happen for no clear reason. It is distinct from grief and other emotions [7]. The overall prevalence of depression based on a study in India was 8.7% in older people [8]. Older people who reported poor health were 2.59 times more likely to have late life depression. According to another research, depression is more prevalent after a neurological disorder like stroke by 36% [9].

Anxiety is a predicted anticipation of a future risk or poor event, observed through emotions of dysphoria or bodily signs and symptoms of tension. It is likewise described as emotional state with an unsightly content, related to a situation of alarm and worry that arises in the absence of danger. Millions of children and adolescents experience anxiety, which is an increasing global public health concern [48]. The prevalence of anxiety issues was 37.9% in research of a mixed group of children and adolescents with neurological diseases.

Seizures have two boards class namely, focal seizures and generalized seizures. Focal seizures are a frontal lobe seizure. EPILEPSY is the intermittent prevalence of epileptic seizures that are due to unusual synchronous discharges of massive numbers of neurons. It is thought that those discharges arise in or predominantly from neurons of cerebral cortex [10]. Frontal lobe epilepsy (FLE) consist of attention, operating memory, processing speed, executive characteristic, and fine motor coordination [11]. Epilepsy is a neurological disorder with an incidence of about 50 new cases per 100,000 people annually [12]. Clinical findings demonstrate evidence of internal consistency between various conditions or observed or measured function [13]. Based on research it was concluded that 79.1% of post stroke patients developed cognitive disorders which show high prevalence.

2. Methodology

A literature review was conducted using electronic databases such as Pub Med, Google Scholar, and Cochrane Library. Keywords: Physiotherapy, neurological disorders, stroke, trauma, Parkinson's disease, schizophrenia, cognitive impairment, music therapy, Alzheimer disease, meta-analysis and systematic review. The following topics were included: The role of physiotherapy in neuropsychiatric disorder acupuncture; non-invasive brain stimulation; behavioral therapy; psychosocial interventions; depression; physical activity and aerobic exercise; the role of physiotherapist in the treatment of schizophrenia.

Inclusion Criteria: 1. The type of experimental design is based on systematic review, data analyses and Randomized control trail. 2. Year article publication ranges from 2014-2022. 3. Age of patient 23-65 years. 4. Published in English language. 5. The subject participating in the experiment is Neuropsychiatric patients. 6. Assessment scale is mainly based on cognitive function (Mini-mental state examination) scale for depression in dementia, Alzheimer disease assessment scale. 7. Role of physiotherapy in this experiment included physical and Aerobic exercise, treadmill, walking, balance and gait training and noninvasive brain stimulation. 8. Important and detailed exercise plan. 9. Neuropsychiatric outcomes as a study end point.

Exclusion Criteria: 1. Articles published before 2014. 2. Age of patient below 23-64. 3. Published in language other than English. 4. Interventions to reduce mental health related stigma. 5. Pharmacological interventions for neuropsychiatric disorder.

3. Review of Literature

Shi-Bin Wang et al. 2018, Conducted a meta-analysis on cognitive behavioural therapy for Post Stroke Depression. One-third of stroke survivors experience the incapacitating neuropsychiatric consequence known as stroke depression. When combined with an anti-depressant, cognitive behavioural therapy has been demonstrated to considerably reduce post-stroke depression and is equivalent to medication in the treatment of moderate-to-severe depression [14].

Mirko Wegner et al. 2020, Conducted a systemic review of meta-analysis on “exercise effects on depression in children and adolescents”. Mental health of children and adolescent is frequently threatened by depressive symptoms and clinically significant depressive illness. The main factor causing a number of illness and disabilities in depression. There are several degrees of severity. With adverse effects include weight gain, an increase in blood pressure and impaired sexual function, selective serotonin re-uptake inhibitor (SSRI) is a frequent treatment for clinical depression. The effectiveness of psychological and pharmaceutical therapy in therapy in treating depressive disorder was comparable. Training in physical activity may be a helpful technique in both the prevention and treatment of depression symptoms. Several mechanisms, including modifications to the HPA axis activity, mono-amine levels and neurotropic growth factor as well as the adaptability of various brain structures have been proposed as the basis for exercise’s beneficial effect on depression. There were 2110 participants between the ages of 5 and 20 in a total of 30 trails. Aerobic exercise was the most commonly used intervention type and the control group stuck to their regular schedule. Exercise is a potential and beneficial alternative for children and adolescent with clinical and non-clinical depression with small-to-medium but consistent favourable effects [15].

Grazioli, Elisa PhD et al. 2019, Conducted a randomized control trial on the impact of simultaneous resistance and aerobic exercise training on a patient's functional status in multiple sclerosis. The clinical signs and symptoms of multiple sclerosis, a long-term debilitating neurological illness that are extremely inter-and intravariable and have an impact on functional, psychological and cognitive areas. For patients with multiple sclerosis, many forms of physical activity have been recommended such as progressive resistance training, aerobic exercise, and combination training to repair numerous functional deficits. A 12-week randomized control trail was conducted to 15 examine how patient’s balance and walking ability were affected by resistance and aerobic training. 20 people made up the entire sample (10 men and 10 women). The

patients were randomly assigned to controlled and un-controlled group following screening. The functional evaluation methods used were Berg balance scale, Time up go test, 6-minute walk test and 10-minute walk test. The treatment comprised 24 sessions, twice a week, and lasting one hour each. It offers a first phase of warm-up then strength training with three exercises for the lower limb and three for the upper limb. The findings of this study support the positive impact of exercise on functional and therapeutic outcomes. It helps with long term decrease management by lessening severity, reducing fatigue perception and enhancing quality of life. Additionally, it lessens the symptoms, disability and disease progression [16].

VE Koliatsos et al. 2020, Conducted a review study on "neuropsychiatry – definition, concepts and patient types". Medical speciality known as neuropsychiatry integrates the knowledge and skills of psychiatry with those of neurology or neuropsychology. Such a mix of information is very helpful when treating complex individuals, especially those in which neuropathology is a main cause or mechanism of psychopathology. Progress along this route will depend on both the critical analysis 16 of the growing body of clinical analysis of the growing body of clinical and research data as well as the careful synthesis of various findings [1].

M Gutkin et al. 2021, Conducted a systematic review on psychotherapy for adults with functional neurological disorder. Functional neurological disorder (FND) is a widespread, incapacitating condition that is frequently thought to be challenging to treat, especially in adults. By thoroughly examining the body of research supporting individual outpatient cognitive behavioural and psychodynamic psychotherapies for Functional Neurological Disorder, this study seeks to advance that. Medical databases were rigorously searched for prospective trails with at least 5 adult participants receiving individual outpatient psychotherapy for Functional Neurological Disorder. 16 of the relevant studies that the search approach found were eligible for inclusion. 12 of them look at cognitive behavioural therapy, while 7 look at psychodynamic therapy. The results were generally equivalent between the two therapy types, despite the fact that the majority of the cognitive behavioural therapy trails lacked long-term follow-up data and psychodynamic therapy lacked high-quality controlled trails [17].

Christian Otte 2022, Conducted a systematic review on cognitive behavioural therapy in anxiety disorders: current state of evidence. Excessive fear and consequent avoidance are hallmark of anxiety disorders, usually in response to a particular circumstance or object and in the absence of actual threat. In terms of the efficacy and effectiveness of cognitive behavioural therapy for the psychotherapeutic treatment of anxiety, it is regarded as the gold standard. Psycho-education regarding the nature of fear and anxiety, self-monitoring of symptoms, physical exercise, cognitive restrain and imaginal and in-person exposure to feared stimuli are all common elements of cognitive behavioural therapy. From 27 randomized placebo-controlled trails compromising 1496 patients, the controlled effect size ranged from 0.35 for panic disorder to 1.37 for obsessive compulsive disorder. Strong evidence for the efficacy and effectiveness of cognitive behavioural therapy as an acute intervention for adult anxiety may be found in the quantitative literature evaluation of randomized placebo-controlled trails and of trails conducted in naturalistic settings [18].

Samad Esmaeilzadeh et al. 2022, Conducted a systematic review for strength-cognitive training in adults and older adults and guideline to promote strength Exergaming innovation. Few people and older individuals engage in strength training twice weekly with appropriate intensity, despite the functional and cognitive benefits, active video games that focus on exercise may enhance the cognition benefits of training and improve motivation and adherence. However, the advantage of strength training that is done in a well-defined and supervised dose, either concurrently or sequentially with cognitive elements. 3 studies were found to be suitable after 1785 studies were screened. One of the 2 trials that combined cognitive and sequential strength training demonstrated better functionality, while the other had the opposite results. Third study used simultaneous interventions found that it had a beneficial effect on both cognition and function. Strong and cognitive training appears to enhance cognition and function in adults and older persons, according to some data [19].

Ramjayam Govindaraj et al. 2021, Conducted an experimental medicine-based randomized control trail on yoga therapy for social cognition in schizophrenia. Positive, negative and cognition symptoms are the 3 main characteristics of schizophrenia. Positive and negative symptoms of schizophrenia (PWS) are treated by the patient. Neurocognition or social cognition deficits are two general categories for cognitive problems. Negative and cognitive symptoms such as a weakness in social cognition are not treatable effectively with the exception of positive symptoms. With or without Neurocognition training, psychosocial interventions are available that focus on some or all social cognition areas. Yoga had a greater impact on patient with schizophrenia unpleasant symptoms than physical activity. A randomized control trail was done to see if practicing 20 yoga sessions over the course of 6 weeks would increase the composite score for social cognition. Out of 581 people, 402 people qualified, 51 consented to participate and 24 were given the yoga assignment. This study demonstrated the value of yoga in treating the negative and social cognition symptoms of schizophrenia [20].

Elisabetta Parra et al. 2020, Conducted a review on impact of physical exercise on psychological well-being and psychiatric disorders. In terms of body composition and abdominal fat reduction, high intensity physical activity outperforms low intensity exercise. Recreational group sports have been proposed as an alternative technique for cardiovascular disease prevention. Regular exercise had been shown to improve not just physical but also psychological well-being and quality of life. Aerobic exercise improves mood and emotional states in the short and long term by boosting good effects, suppressing negative effects and lowering the physiological reaction to acute psychological stress. Several studies suggest that physical activity may help with a variety of neuropsychiatric disorder such as anxiety, post-traumatic stress disorder, autism spectrum

disorder, Alzheimer's disease and Parkinson's disease [21].

Qishou Tang et al. 2020, Conducted a meta-analysis of randomized controlled trails on effects of music therapy on depression. According to the American Music Therapy Association, music therapy is the clinical and evidence-based use of music intervention by a credentialed professional who has completed an accredited music therapy programme to achieve individualized goals within a therapeutic partnership. Music-based interventions are classified into two board categories: music therapy and music medicine. There were 55 randomized control trails in total. Depressive symptoms were significantly reduced by music therapy. Recreational music therapy, guided imagination and music, music-assisted relaxation and improvisational music therapy are some of the specialized music therapy modalities. Music therapy and music medicine both have a larger effect on reducing depressive symptom [22].

Wei Zhang et al. 2021, Conducted a protocol for systematic review and meta-analysis for exercise interventions for post stroke depression. After ischemic heart disease, stroke is the second greatest cause of mortality and disability. Although there is a lot of focus on motor difficulties and physical limitations after stroke, the related psychological illnesses are often are often overlooked. Anxiety, apathy, depression, cognitive impairment, mania, mental disease and post stroke depression are some of the linked psychological disorders. Severe post-stoke depression undermines the patient's faith in therapy and recovery. Exercise has an effect on post stroke depression via improving hypothalamic-pituitary-adrenal response control and increasing immunity. There were both randomized control trails and non-randomized control trails. The study will cover any sort of exercise intervention (aerobic exercise, resistance training, mixed aerobic and anaerobic training, upper and lower limb training, tai chi and yoga), frequency, intensity and duration. There is yet inadequate research about the effectiveness of exercise in post stroke depression [23].

Abdelhakim Khellaf et al. 2019, Conducted a review on recent advances in traumatic brain injury. Traumatic Brain Injury is described as the disturbance of brain functions produced by an external physical force. It is a heterogeneous entity that reflects numerous underlying macroscopic types of injury as well as variety of mechanism that might cause neuronal injury. The clinical severity of Traumatic Brain Injury has long been classified as mild (GCS 14-15), moderate (9-13) and severe (3-8) based on the post-resuscitation Glasgow Coma Scale score. Traumatic brain injury (TBI) is a serious global health concern and priority. Given the pathology's heterogeneity, where a single intervention cannot treat every pathogenic mechanism at play, the necessity of personalized medicine and combinatorial therapy in the field of Traumatic Brain Injury cannot be stressed [3].

P. Kumari et al. 2020, Conducted a review on effectiveness of physiotherapy techniques in children with attention-deficit hyperactivity disorder. Attention deficit hyperactivity disorder (ADHD) is a set of behavioural characteristics characterized by inattention, hyperactivity and impulsivity. It is distinguished by cognitive, motor, perceptual and behavioural abnormalities. Attention Deficit Hyperactivity Disorder patients experience sleep and anxiety problems. Physiotherapy can help to alleviate these problems. Furthermore, physical approaches contribute to mental health care and emphasis the importance of physiotherapy in promoting mental health. Thirty Attention Deficit Hyperactivity Disorder patients were splits into two groups. One was treated with psychology and educational psychology, while the other with psychology and physiotherapy. As a result, the combination of a psychology and physiotherapy program outperforms psychology alone [4].

Robert A. McCurcheon et al. 2019, Conducted a study on Schizophrenia – an overview. Schizophrenia has a complicated origin and a complex presentation. The frontal, temporal and mesotraital brain regions are all involved in the development of symptoms. The present pharmacological treatment uses the same method, blocking the dopamine D2 receptor, which contributes to their negative effect. It is also caused by genetic risk altering neurodevelopment trajectories, resulting in the development of prodromal symptoms; cortical excitatory-inhibitory imbalance and psychosocial stressors [6].

Eugene S. Paykel et al. 2022, Conducted a review on basic concepts of depression. Depression is mostly syndromic and medical in nature. It refers to a group of symptoms and indicators that tend to occur together and represent a common pathophysiology. The main symptoms of depression include a low mood, loss of interest or pleasure and lack of energy. Loss appetite, weight loss, insomnia, agitation, loss of confidence, guilt, decreased attention and suicidal ideation are some of the additional symptoms. Depression is a complicated topic. They are the most frequent psychiatric condition [7].

Letitia Pirau et al. 2022, Conducted a review for the evaluation of frontal lobe syndrome. The frontal lobe is the largest of the brain's lobes, located in front of the central sulcus. The term "frontal lobe syndrome" refers to the impairment of higher functioning brain activities such as motivation, planning, social behaviour and language/speech output. Frontal lobe personality injuries in the orbitofrontal area can produce severe changes in behaviour such as impulsivity and lack of discernment. Boardman region 10,11,12,47 is the most common location for lesion. Is can occur as a result of a head injury, cerebrovascular disease, and tumor or neurodegenerative disease. Treatment is determined by the type of pathology present. Non-medical treatments include physiotherapy and occupational therapy, which are especially effective in disease like frontotemporal dementia [24].

Kayela Arrotta et al. 2022, Conducted a study to identify cognitive phenotypes in frontal lobe epilepsy. Frontal lobe epilepsy is a type of cognitive disorder that affects attention, working memory, processing speed, executive function and fine motor coordination. It is typically distinguished by complex semiology and epileptogenicity, as well as a wide range of neuroanatomical abnormalities. The age of seizure commencement, duration of epilepsy and location and breadth of the epileptogenic zone are all visible. Certain phenotypic features of frontal lobe epilepsy maybe more prevalent than those of temporal lobe epilepsy. This found that attention and

processing speed were the most affected cognitive domains [25].

Glenn Nielsen et al. 2015, Conducted a consensus recommendation on "physiotherapy for functional motor disorders". Symptoms like weakness, paralysis, tremor, and dystonia that are not brought on by a conventional neurological disease are signs of a functional motor ailment. They are linked to a high degree of disability and suffering, an unfavorable prognosis, and a substantial financial burden. Physiotherapy is one of the interventions that may be beneficial in functional motor dysfunction. Physiotherapy can aid in reducing abnormal self-directed attention, normalizing disease beliefs, and eradicating taught patterns of abnormal movement. Not all patients with functional motor disorders, though, are suitable for treatment. 22 The biopsychosocial model and suggestions made are meant to help the patient come up with individualized treatment strategies that take the ailment into consideration [43].

Laura McWhirter MBChB et al. 2020, Conducted a systematic review on functional cognitive disorders. This review's primary goal was to extensively examine the prevalence and clinical correlates of functional cognitive disorder, a subset of in the larger corpus of research on cognitive disorders, functional neurological diseases. 25% of patients who went to memory clinics had functional cognitive problems, which are connected to emotional symptoms, negative disease perceptions, negative self-evaluations, non-progressive symptom trajectories, and linguistic and behavioural variances during therapeutic contact. As a result of inaccurate diagnosis or incorrect prognostication of future deterioration, those with functional cognitive impairment characteristics are more susceptible to iatrogenic harm. More research is required to enhance diagnosis and create efficient treatments for functional cognition impairments, and a deeper understanding of these phenotypes will aid in diagnosing prodromal degenerative brain diseases with greater specificity [26].

Tissa Wijeratne et al. 2022, Conducted a review on "the non-pharmacological intervention in Depression occurring after stroke". A major factor in a poor recovery and a low quality of life after a stroke is post-stroke depression. Strokes are one of the main causes of mortality and disability globally. The status of non-pharmacological therapy for the treatment of post-stroke depression is examined in this narrative review. Non-invasive brain stimulation, behavioural and psychosocial therapy, exercise, acupuncture, music, reading, and art therapy are offered as a stand-alone treatment for post-stroke depression. Non-pharmacological treatments have shown encouraging results in the literature, but larger, more conclusive trials are required to assess their effectiveness in treating post-stroke depression [27].

Raquel Bouca-Machado MSc et al. 2019, Conducted a systematic review defining physical activity, exercise and physiotherapy in Parkinson's disease. The purpose was to define the terms exercise, physiotherapy and physical activity in Parkinson's disease. A comprehensive evaluation discovered significant variations in exercise regimens. Multi-modal exercise was the most researched and most commonly reported prescription parameters were 60 minutes twice a week for 12 weeks. The best available research suggests raising physical activity levels in people with Parkinson's disease and exercise and physiotherapy programs appear to be most effective way to accomplish this [29].

Jinzhi Li et al. 2020, Conducted a randomized controlled trail on "the effect of cognitive behavioural therapy on depression, anxiety and stress in patient with COVID-19". The purpose was to see how effective cognitive behavioural therapy was at relieving patient's psychological distress during the COVID-19 outbreak. Ninety-three suitable volunteers were split into two groups at random: the intervention group (N=47) and the control group (N=46). At baseline and after the intervention, all participants underwent a depression, anxiety, and stress evaluation using the Chinese translation of the DASS-21. For each DASS-21 indicator, two-sided test and percentage test were employed to compare the intervention and control groups. The association between chronic illness status and change in each DASS-21 indicator after intervention was investigated using univariate linear regression. Two-way scatter plots were created to show the relationship between hospital stay length and changes in each DASS-21 indicator by intervention and control group. These finding show 24 Cognitive behavioural therapy's usefulness in improving psychological health in COVID-19 patients and they recommend that cognitive behavioural therapy should concentrate on patients with chronic disease while promoting psychological health in COVID [30].

Khrisha B.Alphonsus et al. 2019, Conducted a thorough investigation and meta-analysis of the impact of physical activity, yoga, and physical therapy on the quality of life for those with multiple sclerosis. Multiple sclerosis is a chronic autoimmune illness that affects the central nervous system's myelinated axons, causing neurological degeneration. This meta-analysis investigates the impact of exercise, yoga and physiotherapy on physical, mental and social quality of life in people with multiple sclerosis. According to the review, physical activity, specifically aerobic exercise and physiotherapy has the greatest influence on physical, mental and social health. This review shows some evidence for exercising and receiving physiotherapy to increase quality of life, but more research on treatment is needed to determine the amount of treatment required [31].

Nicholas J. Bray et al. 2018, Conducted a review article on "genetics of neuropsychiatric disorders. Neuropsychiatric illness are complicated medical conditions with poorly understood neurological underpinnings". There has been considerable breakthrough on the understanding of the genetics architecture of these disorders and the genetic loci involved in recent years. This review article discusses historical effort to identify susceptibility genes for neuropsychiatry disorder, recent progress through genome-wide association studies, copy number variation and exome sequencing and how these findings can inform neuroscientific research into these disorders [2].

Aline Iannone et al. 2016, Conducted a study in the use of safer neuro-modulatory approaches to treat anxiety disorder and

other neuropsychiatric illnesses appears to be the case with transcranial magnetic stimulation and transcranial direct current stimulation. “Transcranial magnetic stimulation” has been researched as a prospective adjuvant treatment for various neuropsychiatric illnesses and for the treatment of drug resistance depression. Although its usage in other neuropsychiatric illnesses is still in its early stages, many doctors have been employing it as an off-label add-on therapy 25 for a variety of conditions. Transcranial direct current stimulation had recently been accessible as a considerably cheaper and portable alternative to transcranial magnetic stimulation. Off-label therapeutic transcranial magnetic stimulation or transcranial direct current stimulation is frequently employed to treat illnesses that are renowned for being resistant to other forms of therapy [32].

Amanda Sacks-Zimmermann et al. 2023, Conducted a study on “rehabilitation of COVID patients having neuropsychiatric symptoms”. The term "COVID" is used to characterize symptoms that develop after COVID-19 infection. Neuropsychiatric symptoms from COVID that have persisted over time can affect a person's functionality and quality of life. Current practicing models are not designed to manage coexisting psychiatric and cognitive issues. Based on data from the most recent post viral chronic illness literature, a bio-psychosocial paradigm for prolonged COVID and therapeutic approaches has been developed. Rehabilitation specialists will be able to recognize typical neuropsychiatric symptoms in long COVID that may be targeted for 26 management by using integrative therapies that consider the biopsychosocial presentation of long COVID symptoms [33].

Alex B. Speers et al. 2021, Conducted a study on “Withania somnifera (ashwagandha) on stress and the stress-related neuropsychiatric disorders anxiety, depression and insomnia”. Withania somnifera (WS) generally known as ashwangandha is widely utilised in Ayurveda and other traditional medicinal system. This review seeks to give a thorough account of preclinical and clinical studies exploring the neuropsychiatric effects of withania somnifera specifically its application in stress, anxiety, depression and sleeplessness. In animal and human test withania somnifera root and leaf extract shown notable anti-stress and anti-anxiety effects as well as alleviated symptoms of depression and insomnia. The hypothalamicpituitary-adrenal, sympathetic-adrenal medullary, GABAergic, and serotonergic axes, as well as serotonergic and GABAergic pathways, may be modulated by withania somnifera to reduce these symptoms. While advantages were observed in the evaluated research significant diversity in withania somnifera extract investigated prevented agreement on the best withania somnifera preparation or dosage for treating neuropsychiatric disorders [34].

Iven-Alex von Muccke-Heim et al.2022, Conducted a review on taxonomical validity and increased comparability between humans and mice is made in the introduction of a depression-like illness for translational neuropsychiatry. The depressed like syndrome is a taxonomical idea for imitating depression in laboratory mice, and it is supported by research demonstrating that mice have sophisticated socio-emotional capacities and can exhibit non-random symptom patterns indicating of an evolutionary preserved disorder-like phenotype. In order to create a bio behavioural reference syndrome for preclinical mouse models of depression, the depressed similar syndrome technique combines cognitive methods based on clinical. The depressive like syndrome criteria is based on accessible, species-specific evidence and include the following elements, minimum phenotypic duration, and severe sociofunctional impairment, core biological characteristic and requisite depressive like symptoms. The long-term goal is to progressively create a framework and validation standard to enhance the translation of research phenotyping techniques [35].

Summer Rolin et al. 2022, Conducted a review which discusses rehabilitation strategies for cognitive and neuropsychiatric manifestations of COVID-19. This study aims to investigate the post-acute COVID-19 sequelae, including protracted COVID syndromes, as well as the cognitive and neuropsychiatric aspects of SARS-CoV. We offer treatment options for the developing neurological effects of COVID-19. Focusing on the acute and chronic consequences of COVId-19, such as cognitive and neuropsychiatric issues, has replaced understanding the pathophysiology and management of respiratory symptoms. The symptoms of infections are similar to those of other syndromes and diseases that affect the central nervous system. Assessment and referral to rehabilitation based on the requirement and symptoms of each individual can reduce morbidity and enhance quality of life [36].

Frida Simon Jahn et al. 2021, In patients with neurological and psychiatric disorders, a thorough analysis of randomised controlled trials on cognitive training with fully immersive virtual reality has been conducted. This systematic study evaluated whether virtual reality can be effective tool in cognitive rehabilitation across diagnoses. Nine randomised controlled trials that were examined. The results showed improvements across a range of cognitive functions, particularly in function and attention. This study provided encouraging evidence for the use of virtual reality in cognitive rehabilitation for neuropsychiatric disorders, but larger and more rigorous trials are required to fully achieve the potential of virtual reality [37].

4. Discussion

Body weight-assisted treadmill rehabilitation (with or without robotic assistance) for balance and gait training is the most used physical therapy technique to restore motor function. [49] Strength and Cognitive training Physiotherapy provides comprehensive assessment and schedule of strengthening exercise, exercise which included working out with a resistance band, working out against gravity and exercising involving weight. To get the benefits of strength training that have been shown, - (1) Offer only a small amount of strength training. (2) Use equipment that is powered by machines to keep cognitive factors from interfering with strength training. (3) Include cognitive strength training with exercises that call for quick reflexes. (4) Include mental exercises to further the cognitive advantages of muscular training. (5) Incorporate inspirational

activities to boost participation. stimulation of the brain without harm non-invasive brain stimulation is a recognized treatment for people with serious depressive disorder. “Transcranial direct current stimulation” (tDCS) is a technique that has been researched in this area. Early research suggests that tDCS may be beneficial for post-stroke depression. In the area of neurorehabilitation, “repetitive transcranial magnetic stimulation” (rTMS) is another recent innovation. In order to maximize neuroplasticity and preserve remaining brain function while learning new skills, it includes activating or inhibiting various neural structures with electromagnetic pulses. “Repetitive transcranial magnetic stimulation” focused on the left dorsolateral frontal cortex has proven to be useful in the treatment of people with post-stroke depression [32]. Physiotherapists provide an important bridge between physical and mental health. Although most physiotherapist interventions revolve around promoting and supporting physical activity and improving body awareness in people with schizophrenia, physiotherapists also play an important role in other areas. Another popular method in neurorehabilitation is music therapy, which is a recognized treatment for people with mood problems and other acquired brain injuries. Significant improvements in memory, disorientation, depression and anxiety were observed in both mild and moderate cases. After just four music therapy sessions, effects on cognitive measures were noticeable.

A. Role of Physiotherapy Interventions

According to the aforementioned study and available data, the primary physiotherapy goals for older patients having Parkinson's disease or stroke recovery can be achieved by using a structural physiotherapy programme to promote balance or gait capabilities and improve motor and cognitive function, thereby improving their ability to carry out daily tasks. Additionally, electrical stimulation of nerves, aerobic exercise, yoga and meditation, tai chi and music therapy appears advantageous in cases of Parkinson’s diseases, stroke or any neuropsychiatric disorder [49].

Treadmill Rehabilitation: The most popular kind of physical therapy for senior patients recovering from a stroke is treadmill rehabilitation, which accounts for the majority of the results for balance and gait training. Participants with the supervision of their regular physiotherapist have been on a high intensity and management programmed for 30 minutes each 3 times per week for 8 weeks. Treadmill rehabilitation is more successful in boosting walking ability, cardio-respiratory fitness, self-efficiency, perception of physical activity, engagement and quality of life lowering depression and cardiovascular risk.[49]

Cognitive behavioral therapy: Cognitive behavioral therapy gave noticeably greater remission and response rate than the other treatment options for cognitive patients. Depression symptoms in post stroke depression were considerably alleviated by cognitive behavioral therapy alone and Cognitive Behavioral therapy combined with antidepressants along with improvement in anxiety, functional deficiency in the nervous system and daily living activities. According to certain finding Cognitive behavioral therapy may affect activity or metabolism in some cortical and sub cortical regions namely the prefrontal, 36 Cingulate, amygdala and hippocampus which are responsible for decision making, language, control emotion, memory and hormone production [14].

Physical and aerobic exercise: A significant amount of study found an amazing quantity of evidence supports the beneficial effect of exercise for treating people with major depression and anxiety disorder. There is some evidence that it may be effective in treating several another psychiatric illness, including schizophrenia, Cognitive disorder and bipolar disorder. Cardio/ physical exercise raises the volume of the Hippocampus, a region of the brain involved with language and encourages the growth of new nerve cells and blood arteries in the Brain.

Yoga and meditation: Regarding the bulk of the outcomes Yoga, breathing exercise and meditation have been shown to have a beneficial effect on treating stress-related disorder like Anxiety and depression through improvements in participants functioning as well as by significantly changing the activity of brain waves among the test subject. Breathing exercises include ‘Anulom-vilom’, pranayama, breathing and meditation. Yoga and Asanas - Study at the time of examination Electroencephalogram changes also included a significant increase in electroencephalogram activity. Meditation practices such as mindfulness meditation, omnidirectional meditation, and breathing meditation increase alpha and theta wave activity in the body. Frontal regions of the brain, as well as extensive changes in gamma wave frequencies. Additionally, yoga has been found to contribute to a significant increase in alpha and theta wave activity in the brain [50].

Tai chi: It is a relaxing workout method that has been practiced for thousands of years. It emphasizes developing a harmony between the mind and body making it perfect for recovering from a stroke patient who experiences weakness and paralysis. The fluid 37 repetitions of 81 motions, which are executed slowly in continuous rhythm and with complete focus are said to support maintaining one’s mental, spiritual emotional and physical health like improving muscle strength, flexibility and Balance [51].

Music therapy: Music therapy, which is a well-liked therapy for people with mood issues and other acquired brain injuries, is another approach that is widely used in neurorehabilitation. It makes use of the concepts of neuroplasticity by combining inputs from the frontal, parietal, temporal, and occipital regions through multi-modal stimulation. Music has an important impact on your brain. From a youthful age, smarts can identify and reuse music, so it has a core function within you. It's a form of sensitive stimulants which can spark further corridor of the brain than other sensitive instigation's and offer deep brain stimulation. Music stimulates brain function in different lobes, cerebellum, and amygdala of brain which are responsible for emotions, memories and language. When your brain registers music, it can spark pleasure neurotransmitters, similar as dopamine, making you feel happy. Music remedy is a good option for people passing cognitive decline, similar as those with madness [50].

Progressive resistance training: Motor and non-motor

challenges caused by Parkinson's disease could be delayed with an integrated rehabilitation programme that includes physical activities, therapeutic exercises, and progressive resistance training. Physical therapy has positive influence and neuro-restorative effects over these symptoms along with the cognitive and psychological problems like depression, fatigue, fear of fall and lack of interest in activities of daily living (ADL). It can give benefits like enhanced muscle strength, mobility as well as endurance [44].

5. Conclusion

The current complete analysis has given the data of up-to-date patient intervention for the patient suffering from neuropsychiatric condition. Although transcranial stimulation, tai chi, meditation etc. are still in early stages. Cognitive behavioural therapy and aerobic exercise combined with resistance training are practically more effective in improving neuropsychiatric condition. It was also beneficial in improving post-traumatic disorder, muscle, anxiety and frontal lobe syndrome. This combination has a very potential and effective result. With the help of above review it has been out that cognitive behavioural therapy, aerobic exercise, progressive resistance training, music therapy, yoga and meditation, tai chi have shown a significant improvement in the rehabilitation of both neuropsychiatric and non- neuropsychiatric disorders.

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