EFFECT OF ART ON INDIVIDUALS UNDERGOING PHYSIOTHERAPY

BY

Sruthi Suresh
(16PCP009)

A Thesis Submitted to
Avinashilingam Institute for Home Science and Higher Education for Women (Deemed to be University), Coimbatore – 641 043

In partial fulfillment of the requirement for the degree of

Master of Science
in
Counselling Psychology

2016-2018 Batch

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Signature of the Head of Department

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Signature of the Guide

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Abstract

Abstract

This study is aimed to assess the Effect of Art on Individuals Undergoing Physiotherapy. The sample of the study consisted of thirty three patients (28 Paraplegics and 5 Quadriplegics) from Spine Injury Rehabilitation Centers of Coimbatore, Tamil Nadu. The Informed Consent Form and Confidentiality Statement, Personal Profile Sheet, Domain Specific Hope Scale (S. Sympson, 1999) and Psychological Inflexibility in Pain Scale (R.K. Wicksell, J. Renofalt, Olsson & L. Melin, 2008) were administered to the subjects. The data was analyzed by using SPSS 16.0 package. The Mean, Standard Deviation, t-test and Correlation were computed. Results show that there is a high level of Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy. There is a significant relationship between the Leisure Subscale of Hope and Avoidance Subscale of Psychological Inflexibility in Pain. There is no significant difference in Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy, before and after the intervention of Music or Mandala Colouring. A significant difference is seen in the Feedback among Individuals before and after the intervention. Furthermore, individuals of different centers show a significant difference in the Social Subscale (Hope) and Avoidance of Pain Subscale (Psychological Inflexibility in Pain). There is also a significant difference in the Psychological Inflexibility in Pain between Individuals of Nuclear Family and Joint Family.

Keywords: Hope, Pain, Physiotherapy, Art

Introduction

Chapter 1

Introduction

"The mind and body are not separate. What affects one, affects the other."

-- Dr. Joe

In today's world, there is an improvement in the field of medicine. Simultaneously, the number of people suffering from various diseases, especially chronic illnesses has also increased. With the development in the field of medicine, individuals are receiving care and treatment to overcome and face the physical problems caused by the illness. However, the effect of physical illnesses and diseases on the mental health of the individual and their families is left unattended. Thus there comes the need to provide psychological support and counselling for individuals and their families who are suffering from diseases and injuries, especially those that cause life-long disability. Providing care for their mental health will prove to be helpful and enable them to accept the disability and learn to move forward in life. Their families will also be benefitted by such support as they will be empowered with strategies of problem solving and coping mechanisms to buffer their emotional burden. Hence, providing psychological care alongside the treatment for the physical illness can be looked into for a more effective and comprehensive treatment plan.

Spinal Cord Injury and Types

The spinal cord is a column of nerves protected by a sheath of myelin. This group of nerves is secured by 31 butterfly-shaped vertebrae. It is an important part of our body, especially for communication between the brain and the rest of the body, as it connects the base of the brain to the body's nerves. A spinal cord injury (SCI) happens when the spinal

column fractures or when the ligaments holding the spinal column together fall out of alignment. As a result of this, the spinal cord within the bony canal may be bruised or crushed. A damage to any part of the spinal cord or the nerves at the end of the spinal cord cause permanent changes in strength, sensation and other body functions below the site of the injury.

It is mostly caused by trauma instead of disease. Spinal Cord Injury can also be of a non-traumatic origin, as in the case of cancer, infection, inter-vertebral disc disease, vertebral injury and spinal cord vascular disease. When a person receives a sudden traumatic blow to the spine that fractures or dislocates vertebrae, they experience SCI which results in the loss of motor function and sensation (Akinwumi & Kehinde, 2015). These injuries can be classified either based on their 'completeness' or based on the 'nature' of the injury. The spinal cord injuries are broadly classified into two categories:

1. *Incomplete Spinal Cord Injuries* in which the cord is only partially severed. This type of injury allows the person to retain some function.
2. *Complete Spinal Cord Injuries* in which the spinal cord is fully severed eliminating function. However, in this type of injury, treatment and physical therapy may help to regain some function.

Different labels are assigned to these injuries based on their nature. The most common types are:

1. *Tetraplegia*, also known as quadriplegia, which is the most severe form of injury resulting from damage to the cervical spinal cord. This type of injury produces varying degrees of paralysis of all limbs.
2. *Paraplegia* occurs when sensation and movement are removed from the lower half of the body, including the legs. This type of injury occurs as a result of damage to the thoracic spinal cord.

3. *Triplegia* refers to the loss of sensation and movement in one arm and both legs and mostly occurs as a result of incomplete spinal cord injury ("Spinal Cord Injury", 2017).

Causes of Spinal Cord Injury

The causes of spinal cord injury can be broadly classified as traumatic, due to a trauma and non-traumatic, due to other causes. The common causes of SCI are as follows:

- Automobile Accidents (38%)
- Falls (30.5%)
- Violence (13.5%)
- Sports Injury (9%)
- Medical/Surgical Complications (5%)
- Miscellaneous causes (4%)

A traumatic spinal cord injury can be caused due to flexion injuries, rotation injuries compression injuries, hyperextension injuries and penetrating injuries. However, non-traumatic SCI can be due to a large number of health problems and diseases. It includes arthritis or degeneration of the spinal cord, cancer, circulation or bleeding problems, infections, inflammation, multiple sclerosis and spinal stenosis (Shepherd Centre, 2018).

Effect of Spinal Cord Injury

The symptoms experienced by people with SCI, differs based on the site of injury as well as whether the injury is complete or incomplete. In individuals with incomplete injuries, some level of functioning remains below the level of injury. In the case of those with complete injuries they have no functioning below the level of injury. As a result of such spinal cord injuries, the patient may experience physical signs and symptoms such as:

- Loss of movement
- Loss or altered sensation, which effects the sensations of temperature and pressure as well
- Loss of bowel or bladder control
- Exaggerated reflex activities or spasms
- Changes in sexual functioning, which includes, sexual sensitivity and fertility
- Pain or an intense stinging sensation which is a result of damage to the nerve fibres in the spinal cord
- Difficulty breathing, coughing or clearing secretions from the lungs

Overall it is a devastating event that has not only physical effect but also social and psychological effects on the injured person, the spouses, the children, the extended family members and the society at large by increasing its economic burden and making it a major global public health issue presently and in years to come (Akinwumi & Kehinde, 2015). Furthermore, the families of these patients are equally affected by this.

With injury comes pain, both physical and psychological. A person having spinal cord injury experiences immense pain as a result of the injury itself, surgery and/or rehabilitation measures taken. They may also find it difficult and even deny the limitations imposed on his/her functioning due to the injury. They may continue to wait for the day when they will go back to their pre-injury level of functioning. The families too find it difficult to support and provide continuous care for a person who was previously hale and healthy. Therefore, both the patient and their family have to face and overcome many psychological and social difficulties as a result of a spinal cord injury (Saulino, 2017).

Psychosocial Responses to Spinal Cord Injury

The average age for SCI to occur is statistically seen to be between 16 and 30 years of age. The majority (male to female ratio 4:1) of injuries are recorded to be happening to men. It is during this period of life, that individuals undergo important emotional growth and psychosocial development. The person with spinal cord injury realizes that they have to adjust to the disability as a life-long process. This period of adjustment focuses on dealing with the loss and learning all about the injury. Patients gradually need to learn to be independent as far as they can.

The process of adjusting to the injury extends over a period of time. Furthermore, this process is not linear in nature and is different for each individual. The psychosocial adjustment to SCI is a process that challenges the emotions and coping mechanisms for most individuals. Typically beginning at the time of injury, this process of adjustment extends throughout the individual's life, demanding new adjustments as the individual progresses and faces new experiences.

Once people with SCI enter back into the community, they tend to experience new problems which they did not anticipate while in the rehabilitation centre. The difficulties an individual faces with regard to accessibility, discrimination, reactions to the wheelchair by strangers, financial hardships and isolation in the home, each bring forth an emotional response. These responses can also turn out to be overwhelming, within a short period of time. However, most people do cope and manage the injury well. Although the emotional reaction may be unique for each individual, some of the more common reactions to injury, which should be alert psychosocial providers are as follows:

- Unnecessary dependency on others
- Low self esteem and/or Self-blame
- Anger and aggression

- High levels of stress and/or Post-traumatic Stress Disorder
- Depression and associated symptoms
- Marital and relationship conflict

Although the individual's psychosocial adjustment is important for quality of life, the environment also plays an important role in defining the level of disability. The act of discriminating against people with disabilities, inaccessibility and negativity, is seen to increase their perceived level of impairment. The 'social or biopsychosocial approach' understands the disability does not only result from the physical limitation of a person but is determined by the interaction between a person's functioning and their social and physical environment. (Muldoon et al., 2015).

Hope

Hope has been defined as a positive orientation toward future improvements and is associated with health and well-being. Charles R Snyder, a positive psychologist along with his colleagues proposed the Hope Theory in the year 1991. According to their theory, hope consists of agency and pathways. Hope is defined as "a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy) and (b) pathways (planning to meet goals)" (Hanson, 2009). A hopeful individual has the will and determination that their goals will be achieved. Such a person also possesses a set of different strategies, which are available at their disposal, to reach their goals. When an individual has hope, it allows him/her to approach problems with a mind-set and strategy-set suitable to success. This thereby increases their chances of accomplishing their goals. It can be considered as a dynamic cognitive motivational system (Kaufman, 2011).

Hope has been described as a "lighthouse" that provides guidance in a storm or as a dynamic process that is essential for lire, health, and well-being (Bay, 2001; Forbes, 1994).

Hope is usually considered to be a life force, characterized by a confident but uncertain expectation of a realistic and positive future that is personally significant to the person who hopes (Dufault, 1981).

An individual's perspective of one's life is extremely important after he/she suffers an SCI. Laskiwski and Morse (1993) found that hope in the patients' lives, was a constant state (or a consistent background). It was a matter of sentiment that the patient could not continue without. Based on field notes, tape-recorded interviews, and diaries, these authors found that the patients' expressions of hope were modified to a realistic level, consistent with their injury. Patients expressed that they had no choice but to reconcile themselves to their situation and that acceptance was possible even under disagreeable circumstances. The researchers also found that the patients tended to prepare themselves by bracing for negative outcomes and forming mutually supportive relationships. Patients continually evaluated their progress, noting the slightest gain in mobility and celebrating each small gain in function and activity learned. The process itself (the small steps along the way) seemed to be more important than the product (the result in the end).

It has been found that irrespective of how long they have been injured, hope plays an important role in the patients' lives (Piazza et al., 1991). The rehabilitation period was not a linear experience, but patients experienced the process as good and bad days. For patients, good days, were those when they mastered new skills and felt energetic (Laskiwski & Morse, 1993); this might be an expression of being hopeful. They had bad days more frequently than good days and felt a constant struggle to perform. Being an integral part of the patients' existence they hoped constantly, however, for different things at different times.

According to Piazza et al. (1991), it can be harmful to foster false hopes in SCI patients and this would create more persistent problems, such as false fears and despair. Davies (1993) suggested that hope should be reality-based and viewed from the perspective

of the individual. According to Kennedy et al. (1995), denial may help the individual accept the deficit gradually, although longer term denial also may lead to problems. As suggested by Elliot et al. (1991), different components of hope might have salient effects on the perceptions of ability to function in social capacities, in the process of reality negotiation with the patient (Lohne, 2001).

Psychological Flexibility

Psychological flexibility spans a wide range of human abilities to:

- To recognize and adapt to various situational demands;
- To shift mind-sets or behavioural repertoires when these strategies compromise personal or social functioning,
- To maintain balance among important life domains; and
- To be aware, open and committed to behaviours that are congruent with deeply held values.

Thus rather than focusing on specific content (within a person), definitions of psychological flexibility have to incorporate repeated transactions between people and their environmental contexts. In many forms of psychopathology, these flexibility processes are absent.

Research studies have proved that flexibility goes hand-in-hand with other strengths. This includes an ability to discern multiple dimensions when assessing people and events, and instead of exhausting finite energy in pursuit of the 'perfect mix' of positive and negative thoughts and feelings. Most of the ego-resilient people rely on personally meaningful values to help them in making decisions and guiding their actions. Although causality cannot be determined, flexibility appears to move people from extrinsic motivated actions toward self-determination and related health benefits (Kashdan, 2010).

Although experts in SCI management are able to predict a patient's ultimate functional capacities based on the level of SCI, pain may also prevent people from attaining the predicted level of functioning. The prevalence of pain in SCI patients has been estimated to be 69%, and nearly one-third of patients rate their pain as severe. Moreover, in a longitudinal study on the prevalence of severity of pain in SCI, Siddall et al. found that 91% of those studied reported pain at 2 weeks following injury and 64% still had pain at 6 months following the injury. Despite the high prevalence and impact of pain on QOL, the mechanisms of pain in SCI patients are not well understood. Loeser (2007) writes, 'clinical neurophysiology may help define the completeness of the SCI or associated nerve root injuries, but it does not delineate pain types or predict the likelihood of successful treatments with various strategies. Physicians can describe the type of pain in broad categories, but not on the basis of underlying mechanisms.'

An individual with psychological flexibility is able to pursue values and goals in spite of the pain he/she experiences. It comprises of six processes: Acceptance, Defusion, Moment-to-Moment Awareness, Self-as-Context, Values Orientation and Committed Action. In the Psychological Inflexibility of Pain Scale the two subscales measure Avoidance of Pain (Avoidance) and Cognitive Fusion with Pain (Fusion). Avoidance measures the behavioural tendency to withdraw from planned and valued activities and social participation in response to pain or its expectation. Fusion is intended to measure the entanglement of pain-related thoughts and actual experiences, i.e. difficulty of distancing oneself from thoughts about pain and its possible causes (Barke, Riecke & Glombiewski, 2015).

Rehabilitation for Spinal Cord Injury

A spinal cord injury can be understood as one of the most devastating orthopaedic injury and with prolonged survival being the rule. Furthermore, rehabilitation of these injuries

has an increasingly important role. Once the patient is medically stable, care and treatment shift to support and rehabilitation. Family members, nurses or specially trained aides may provide care and help the patient bathe, dress, change position and perform activities of daily living. The primary goals of rehabilitation are prevention of secondary complications, maximizing of physical functioning and reintegration into the community.

The rehabilitation process includes individuals of various professions forming a multidisciplinary team to make the process effective. They are:

- Physical therapists typically focus on lower extremity function and on difficulties with mobility
- Occupational therapists address upper extremity dysfunction and difficulties in activities of daily living
- Rehabilitation nurses deal with the issues of bowel and bladder dysfunction
- Psychologists concern themselves with the emotional, behavioural and any potential cognitive dysfunctions experienced by the injured patient
- Speech language pathologists address the issues of communication and swallowing
- Case managers and social workers are the primary interface between the rehabilitation team, the patient and his/her family and the payer source (Saulino, 2017).

Rehabilitation is a time in which both physical and psychological growth is important. Following discharge, it is essential that the person who has sustained a SCI has the psychological skills to actively participate socially and vocationally in the community and in society. This includes the ability to maintain health and to direct care givers as needed in order to reduce the possibility of secondary complications. Self-management is an important asset to be mastered early in the rehabilitation process. The team members involved in the rehabilitation process assist people with SCI by providing counselling, education and

problem solving. They also facilitate positive coping skills and teach methods to manage anxiety. A peer counsellor can not only serve as a role model by demonstrating mobility, involvement in sports and a positive attitude but can also help to improve the mental health of the individual with SCI (Muldoon et al., 2015).

Physiotherapy

As a result of SCI most individuals face some level of paralysis or some loss of functioning in their body. Consequently, bladder, bowel, respiratory, cardiovascular and sexual functioning in the body is affected. Physiotherapists treat a wide range of problems including the functioning of the various body systems, in spite of the underlying pathology being neurological in nature. They treat pain and respiratory complications, use electrical stimulation to treat pressure ulcers, formulate fitness training programs, encourage people with SCI to adopt healthy lifestyles and teach disabled sports. They provide patients with various types of orthoses, splints and aids, prescribe wheelchairs as well as advise on strategies to prevent shoulder pain and pressure ulcers while administering various electrotherapeutic interventions. Hence, physiotherapists working in SCI require an extensive set of clinical skills combined with high quality direct evidence to excel in their service.

Before beginning the process of physiotherapy, assessment is an important initial step taken. It may be a subjective form of assessment by the physiotherapist or an objective way of monitoring improvement over time. An assessment is done to determine the difficulties faced by the individuals and is used to guide the treatment. The results of these assessments assist in the goal setting process as well so as to tailor the physiotherapy interventions to suit the needs of the individual. During the phase of rehabilitation, physiotherapy focuses on the goals related to motor tasks such as walking, pushing a wheelchair, transferring and using the

upper limbs. The commonly used physiotherapy intervention focus mainly on three problems: weakness, contractures and poor motor control.

Physiotherapy interventions to increase strength. People with SCI experience weakness as the most obvious impairment that prevents them from performing motor tasks. To improve the muscle strength of the individual, the strength training exercises given are the same as those given to able bodied people. They are provided a progressive resistance training program. In this program the load is appropriately and progressively increased. Performing such training within the context of a functional skill will prove to be more beneficial for the individual. Studies have proved that progressive training for non-paralysed muscles not only increases strength but also increases quality of life.

Physiotherapy intervention to treat and prevent contractures. One of the common problems faced by individuals with SCI is contractures. A study indicates that 66% of people who sustain a SCI will have at least one notable contracture within a year of injury. In spite of lack of evidence related to its effectiveness, passive movements and stretch are used to treat as well as prevent contractures. In various studies stretches and passive movements have been administered in very large dose. However, it may not be so in clinical practice. This indicates that the individuals with SCI need to self-administer passive movements and stretches need to be incorporated into an appropriate positioning program.

Physiotherapy interventions to improve the performance of motor tasks. Most of the physiotherapeutic interventions focus on improving the patients' ability to perform motor tasks such a walking, transferring, pushing a wheelchair and using the upper limbs. These

interventions are based on principles of motor learning, which can also been used to train gait in people with the potential to walk. Some studies have proved the superiority of treadmill and robotic devices compared with overground training for gait training. However, it is still unsure who should be encouraged to walk and who has the potential for neurological recovery (Harvey, 2016).

Aquatic Therapy

The process of recovering from a brain or spinal cord injury can be a long drawn out process. There is substantial clinical evidence that expertly applied aquatic therapy improves recovery times and patient outcomes. An unique medium for neuromuscular re-education and strengthening for rehabilitation is provided for in an aquatic environment. The water's buoyancy allows freedom of movement that is ideal for individuals who have restricted mobility due to weakness and paralysis. When movements are performed against the resistance of water, there is a quicker increase in muscular strength. This combination of freedom and resistance is very difficult to duplicate in any land-based therapy environment.

The water environment permits earlier detection of small neuromuscular movement and responses. To increase the range of motion and strength, the anti-gravity effect of water provides an easier environment. Spasticity is a common issue with neurological injury that can be exacerbated by cold. A warm water therapy setting minimizes spasticity, facilitates movement and increases patient comfort.

Neurological restoration and functional ability are dependent on core strength and balance of an individual. The increased viscosity and buoyancy of the water provides support in both the sitting and standing positions. In order to challenge and strengthen core muscles and balance mechanisms, the wave action proves to be useful. Off-balance falls are slowed due to the water resistance, which helps with protective response training. When the patient's

fear of falling is decreased, there is an improvement in trial effort which further results in greater progress per session.

Those clinicians who, not only understand but also applies the principles of the aquatic environment will be equipped with an extremely useful neuro-rehabilitation tool. Patients would also appreciate the opportunity to work in a safe and comfortable environment that provides an opportunity for increased and more rapid progress (HydroWorx, 2018).

Psycho-education

Psycho-education (PE) can be defined as an intervention that provides systematic, structured and didactic knowledge transfer for an illness and its treatment while integrating both, emotional and motivational aspects. It enables patients to cope with the illness as well as in improving treatment adherence and efficacy. The training skills that an individual can employ in life and society for one's support are also considered as a part of such interventions. When an individual experience SCI, he/she may not have a thorough understanding of its consequences or the injury itself. Furthermore, the individuals' family may also not be aware of the required changes in their lifestyle. Therefore, providing psycho-education for the individual as well as their family members is extremely essential.

Platforms for individuals with SCI to share and discuss their doubts help them to deal more effectively with their problems by changing their attitudes and values. It is also beneficial to arrange sessions to train participants regarding the strategies of coping with stress and depression, relaxation techniques, crisis confrontation strategies, principles of correct relationship within the family and strategies for providing the SCI individuals with correct physical case, preventing backache and accurately transferring the individuals from the bed to the wheelchair and vice-versa (Molazam et al., 2014).

Counsellors in rehabilitation centres also deal with the individual clients and their families in order to educate them about SCI and the available treatments. They can help demystify the injury and treatment process, as well as help the family plan the care of the individuals at home. Such psycho-educational sessions will help the family be ready to care for the individual with SCI and support the process of rehabilitation. It can also help them to accept the reality by removing any false hopes in both the individual with SCI and the family.

Vocational Rehabilitation

Vocational rehabilitation is a broad term that encompasses an array of services to help a person become employed or re-enter the workforce after illness or disability. These services are provided on a time-limited basis in 3 phases: assessment, job placement and follow-along support. Despite the advances in medical care and legislative efforts aimed at improving employment for persons with disabilities, rates of return to work following spinal cord injury have remained low (Ottomanelli et al., 2015). Some of the common reported barriers to employment were problems with transportation, health and physical limitations, lack of work experience, education or training, physical or architectural barriers, discrimination by employers and loss of benefits (Lidal, Huynh & Sorenson, 2009).

Some centres provide vocational training to the individuals with SCI during their rehabilitation. This includes sessions of pen making, tailoring and paper bag making. Both the individuals with SCI as well as their care givers are taught these skills. They also ensure that the individual continues to have a source of livelihood by giving them work assignments even after their rehabilitation process is over. In some cases, the centres provide employment opportunities for these individuals if they have relevant qualifications, and also engage them as peer counsellors at their centre. However, it is up to the individual to make appropriate use of these opportunities once they are given awareness and the required guidance.

Psychological Interventions for Spinal Cord Injury Patients

The psychological impact of spinal cord injury is significant, with 30% of the patients showing clinical levels of anxiety and/or depression during rehabilitation and after returning to community living. Research suggests that specialist psychological interventions have a role in managing these emotional outcomes (Dorstyn, Mathias & Denson, 2009). Some of the psychological interventions that have been used for individuals with SCI are discussed below.

Individual and group cognitive behaviour therapy (CBT). Individualised CBT sessions for individuals undergoing SCI rehabilitation has shown a significant time effect with worsening symptoms of depression in a three-month follow-up after CBT was discontinued. An improvement in the symptoms of anxiety and stress was found in the treatment group as inpatient therapy progressed. This shows that individualized psychological treatment, contributed to short-term, meaningful improvements in emotional outcomes for individuals with SCI (Dorstyn, Mathias & Denson, 2010).

Group –based programs using CBT have been advocated as a time-efficient inpatient therapy model. Their effectiveness if influenced by group homogeneity with regard to patient characteristics. It can be used to augment rather than replace individual therapy. Research shows that CBT is a promising and effective approach for those with SCI experiencing depression, anxiety, adjustment and coping symptoms (Mehta, et al., 2011).

Coping effectiveness training (CET). Research findings indicate that group participants who underwent coping effectiveness training (CET) showed a significant reduction in depression and anxiety when compared to matched controls following the intervention. Although there was no significant change in the patter of coping between the two groups, there was a significant decrease in the discrepancy between the ‘ideal self’ and ‘as I am’

in the intervention group. These results indicate that CET interventions facilitate a significant improvement in psychological adjustment to spinal cord injury (Kennedy et al., 2003).

Group pain management programs (PMP). A clinical sample of people with spinal cord injury, were provided with a specifically modified group-based, multidisciplinary cognitive behavioural pain management program. It was found that the PMP group experienced lesser pain intensity as well as an overall improvement in mood and life interference due to pain following the intervention. There was also a significant improvement over time in anxiety and pain catastrophizing in the PMP group members (Perry, Nicholas & Middleton, 2010).

From these studies it can be understood that most of the interventions provided for individuals with SCI are centred on cognitively enabling them to handle pain. However, a lack of a wide-spread use of creative forms of helping these patients is seen. For the above forms of intervention to be effective, the participants should have a certain level of cognitive functioning and would be required to have a base level of education as well. Hence, not all patients will be able to engage in and successfully reap the benefits of these interventions. The investigator's inquisitiveness regarding the creative forms of therapy and its easy use has urged her to examine the effect of Art on individuals with SCI. Such therapies not only provide a channel of leisure activity but can also be easily understood and applied to different categories of participants with SCI. Therefore, she has examined the effects of art on the mental health of individuals and how it can be effectively used as an intervention for individuals with SCI.

Music and Mental Health

One of the most enigmatic human behaviours, world over, is listening to music. The belief that music has healing powers over the mind and body has ancient origins. However, its formal use as a therapy emerged much later. Early philosophers such as Aristotle and Plato recognized the healing influence of music that could affect and improve the health and behaviour of an individual. In the era of the World War I, musicians travelled to veterans' hospitals and facilities all over the United States and played for both physically and emotionally wounded soldiers. As a result of this musical entertainment, these patients showed significant positive improvement. The doctors and nurses, who noticed this change, requested their institutions to hire musicians to play on a regular basis for patients. This was one of the first proofs of the validity of music in improving an individual's mental health. Consequently, courses and schools were developed to provide specialized training to offer musical interventions.

Further on music has been used in various settings to induce relaxation, reduce depression, lower stress levels, promote positivity, improve communication skills and for other related benefits. For children, it has been seen that musical activities provide a motivating, comfortable and stimulating environment, where they can improve their communication and language abilities (Drake, 2014). There are different effects of music listening on heart rate, heart rate variability, hormones related to energy mobilisation and hormones associated with regeneration/anabolism. Its use in nursing care helps in several ways, as a distraction, for relaxation for a patient in general, palliative care, as a means of stimulation for the elderly, as a distraction for children or in a more formal manner as a therapeutic intervention in mental health. The latter is known as music therapy (Phaneuf, 2013).

Music therapy benefits patients across the spectrum, from premature infants in neonatal intensive care units responding to lullabies to swing band numbers increasing elderly Alzheimer's patients' moods and appetites. Music therapy has been shown to have a significant effect on an individual's relaxation, respiration rate, self-reported pain reduction, and behaviourally observed and self-reported anxiety levels. A qualified Music Therapist can conduct a coordinated program of music and music therapy interventions for those with trauma. This provides opportunities for:

- Non-verbal outlets for emotions associated with traumatic experiences
- Minimizing or alleviating pain
- Promoting movement for physical rehabilitation
- Anxiety and stress reduction
- Positive changes in mood and emotional states
- Active and positive participant involvement in treatment
- Enhanced feelings of control, confidence, and empowerment
- Positive physiological changes, such as lowering blood pressure, reducing heart rate, relaxing muscle tension, and inducing sleep

A large number of clinical studies have indicated the effectiveness of rhythm and music to produce functional change in motor behaviours and a wide range of physiological effects on the human body including changes in heart rate, respiration, blood pressure, skin temperature, and muscle tension. It is also well known that Music Therapy provokes emotions, mediated via neuro-hormones such as serotonin and dopamine, and makes a individual experience the same as joyous or rewarding through activity changes in the amygdala, ventral striatum and other parts of the limbic system (JB Music Therapy, 2017).

A recent study (Charmaine Kleiber & Mary Adamek (The University of Iowa) observed the effects of music therapy on adolescents who undergo spinal fusions for

adolescent idiopathic scoliosis (AIS). This therapy was intended as an intervention to decrease postoperative pain intensity in adult samples. In the study, the Music Therapist visited AIS patients on postoperative day 2, when the adolescent got out of bed and moved into a chair for the first time.

The effect of music therapy, on teen's showed changes in perceptions of pain and mood, with most experiencing decreased pain and decreased negative emotions such as anger and anxiety. They commented on the importance of individualizing therapy, including the ability to choose preferred music. It also important to note that, the presence and interaction with the Music Therapist was perceived to be an important part of the therapy. Preparation for surgery was a strong theme. Most participants thought that it would be useful to know about music therapy before surgery. The suggestions made to these patients, were to hear advice from previous AIS patients, know how music therapy would help, bring preferred music, as well as to practice relaxation with the music preoperatively (Carter, 2012).

Music, especially for those who suffer, for persons with cancer or with a terminal illness who are not in palliative care units, is not superfluous. It is seen that stress and pain can be alleviated by music with its calming effect, certain activities that demand or promote concentration, stimulating colours and the possibility to express the unsaid things which makes one suffer. One must remember that the important thing is not the beauty of the final product but the process which enables the patient to concentrate or focus on themselves, to express themselves, to reduce stress and negative thoughts and to develop self-confidence. It is surprising to note in some cases, how individuals who no longer expressed themselves because of a neurologic or psychiatric disorder, succeed in doing what is necessary to draw, to thread beads on a necklace, or do some needlework (Thaut & McIntosh, 2010).

Mandala Colouring and Mental Health

The word mandala has its importance in many cultures and spiritual practices. The origin of this word ‘mandala’ is from the ancient Sanskrit language and is interpreted as “circle” or “center”. The use of mandala in religious rituals and for meditation is an old practice and has been followed for many centuries. It might seem like an interesting geometric shape but it’s much more than that. It was Carl Gustav Jung, who introduced the Eastern concept of the mandala to Western thought. He also believed that this symbol represented the total personality of an individual-- aka the Self. He recommended a therapeutic intervention of colouring mandalas (circular designs that can contain intricate patterns or symbols) to help in promoting psychological health, as he perceived that drawing mandalas not only had a calming effect on his patients but also facilitated their processing of thoughts and emotions.

The eminent art therapist Joan Kellogg invested a great part of her life in developing a system of understanding the wisdom of the mandala, which she called the "Great Round." In her theory, Kellogg combines parts of Jung's discoveries and her own research spanning several decades. In particular, she suggested that an individual’s attraction to certain shapes and configurations found in mandalas would convey his/her current physical, emotional, and spiritual condition in the moment.

The effects of a mandala lies in its ability to promote relaxation, enable the achievement of inner balance, enhance creativity and provide the individual with an opportunity for many significant insights. Whether one draws it or uses a mandala colouring page, mandala represents a person’s psychological state. Consequently, a mandala is said to be energetically alive as it is always created by someone’s emotions, thoughts and desires. This is one of the reasons why mandala colouring pages are so amazing: they give an opportunity to express in a creative manner what is troubling the person, what they feel at the

moment, to represent their place in the world or to create something they want to be. Because of this, the mandala can be a powerful tool for gaining psychological insights or even for making a change in life (Malchiodi, 2010).

Mandalas are circular geometric shapes considered to be universal symbols of spiritual growth or a form of visual meditation. Colouring the moderately complex, symmetrical and repeating patterns of the mandala helps in entering a meditation-like state that can lead to self-discovery and helps remove negative thoughts and emotions. A major study conducted in the United States showed that colouring mandalas can be used to reduce anxiety in both children as well as adults. However, this therapeutic intervention is not only limited to students and adults, but can be used for the illiterate and disabled and for people of all groups. It can be used as a self-help activity or as a tool in various settings such as academic, clinical, work, etc. to help overcome anxiety and improve performance (Noor, Saleem, Azmat & Arouj, 2017).

Shapiro (1985) could observe in her patients that perception of more pain occurred at times when they had little to do or were unoccupied. These observations could be interpreted that an engaging patients in art therapy could help to redirect their attention away from pain and into other activities. It has been shown that using various forms of art, whether it be music, drawing, etc. is beneficial and art therapy can become an invaluable “tool of empowerment” when faced with painful experiences. This is what is learnt from those who suffer and who find meaning to their lives, resorting to drawing or a watercolour. Art is a break from reality. And even though it does not enable a person to flee from their existential condition, one can at least hope that it will rekindle the desire to dream even in those who would flee unto death (Phaneuf, 2013).

Need for the Study

In the recent times there is an increase in the rate of chronic illness, as compared to the prior high rates of acute illness. When affected by such conditions, patients are faced with problems of adjustment as well as getting back to their former level of functioning, throughout their life. In the process of rehabilitation a team of professionals work towards helping the patient overcome these difficulties and accept those that cannot be overcome. Therefore, the mental health of these patients needs to be assessed and best efforts should be made to assist them in resuming their former lifestyle. If they are unable to do so due to their conditions, it should be ensured that they are enabled to accept this and move forward in their life.

Hope is a much required cognitive aspect for an individual. It keeps the person motivated to work and looking forward to the future. It is hope that brings about achievements and happiness in life when the expectations are fulfilled. It also ensures that the person does not enter a phase of depression or pessimism. In patients with SCI it is common to have depressing and distressing thoughts about the future and how they can lead a life different from the one they lived before. Hence, assessing their level of hope in the domains of Social Life, Family Life and Leisure Time activities can provide an insight into their mental health and ability to deal with the condition.

The concept of psychological flexibility has been studied under various names in the past. This term refers to the ability of the person to accept and adapt to the changes in their life. It enables the individual to modify his/her behaviour, thoughts and actions to the situation at hand, thereby making themselves more suited to handled that situation. When a person suffers from SCI, there are high chances that he/she may enter into a defensive mode or have a firm belief of resuming the same level of functioning before the injury. Only if they are able to accept the reality, can they work towards improving their life as it is.

The use of Music and Mandala Colouring is widely recognized. It has been found to induce relaxation, positivity, self-awareness, mindfulness and many other benefits among people. Hence, the investigator's insight into finding the effect of Music and Mandala Colouring on SCI patients was a new challenge with limited studies to prove its significance. Although there were sufficient studies regarding the use of Music as an intervention, studies related to use of Mandala Colouring were few in number.

There is an urgent need to conduct empirical research on the mental health of SCI patients by looking into other variables of mental health other than the most commonly studied depression and quality of life. Studying and documenting the effectiveness of different interventions for this population is also much needed. An array of effective interventions can give the patient customized treatment based on their preferences, instead of restricting them to any one form of intervention. Such studies will provide an evidence-based treatment choice for improving the mental health of SCI patients and psychologically rehabilitating them simultaneously with their physical rehabilitation. Thus, studying the effect of Music and Mandala Colouring on the mental health of patients, focusing on patients with SCI is the need of the hour.

Review of Literature

Chapter 2

Review of Literature

The review of earlier studies conducted in related area is of prime importance in any research to formulate an effective methodology. The literature pertaining to the present study 'Effect of Art on Individuals undergoing Physiotherapy' is reviewed. It includes the studies on:

- Spinal Cord Injury
- Correlates of Hope
- Correlates of Pain
- Effect of Art
- Correlates of Art

Incidence, Prevalence and Epidemiology of Spinal Cord Injury

DeVivo (2012) studied the data of traumatic spinal cord injury (SCI), in relation to the incidence, prevalence, demographic characteristics, etiology, injury severity and selected treatment outcomes. Through his review study, he found that incidence and prevalence of traumatic SCI in the United States are higher when compared to the rest of the world. Average age at injury is increasing in accordance with an aging general population at risk. The proportion of cervical injuries is increasing, whereas the proportion of neurologically complete injuries is decreasing. Injuries due to falls are increasing. Recent gains in general population life expectancy are not reflected in the SCI population. Treatment outcomes are changing as a result of increasing age and changes in US health care delivery.

Wyndaela and Wyndaele (2006) attempted to provide an overview of the literature data on incidence, prevalence and epidemiology of spinal cord injury (SCI) worldwide and to

study their evolution since 1977. The prevalence of SCI was obtained from two studies, whereas 17 studies examined the incidence of SCI . The published data on prevalence of SCI was insufficient to consider the range of 223–755 per million inhabitants to be representative for a worldwide estimate. The number of inhabitants per year effected is estimated to be 10.4 and 83 per million. One-third of patients with SCI are reported to be tetraplegic and 50% of patients with SCI to have a complete lesion. The mean age of patients sustaining their injury at is reported as 33 years old, and the sex distribution (men/women) as 3.8/1.

Psychological Aspects of Spinal Cord Injury

Bonanno, Kennedy, Galatzer-Levy, Lude and Elfstrom (2012) investigated the longitudinal trajectories of depression and anxiety symptoms following spinal cord injury (SCI) as well as the predictors of those trajectories. Most of the SCI patients exhibited considerable psychological resilience. Models for depression and anxiety evidenced a pattern of elevated symptoms followed by improvement and a pattern of delayed symptoms. Chronic high depression was also observed but not chronic high anxiety. Analyses of predictors showed that resilient individuals view major stressors as challenges to be accepted and met with active coping efforts.

Post and Leeuwen (2012) studied the review of literature on subjective well-being (SWB; mental health and life satisfaction) and on psychological and social support factors associated with these outcomes in people with spinal cord injury (SCI). Results indicated that people with SCI experience, on average, higher levels of distress and lower levels of life satisfaction compared with the general population. Individual differences, however, are large, and most people with SCI adapt well to their condition.

Craig, Tran and Middleton (2009) conducted a systematic review of the literature concerning the nature of the psychological morbidity in people with spinal cord injury

(SCI). The systematic review revealed that clarification is still needed concerning the psychological consequences of people with SCI. However, findings suggest that approximately 30% of people with SCI are at risk of having a depressive disorder although in rehabilitation, and approximately 27% are at risk of having raised depressive symptoms when living in the community. The review also established that people with SCI have higher comparative risks of anxiety disorder, elevated levels of anxiety, feelings of helplessness and poor quality of life (QOL).

Pollard and Kennedy (2007) conducted a study in a sample of traumatic spinal cord injured people. They examined the emotional impact, psychological growth and coping strategies of the participants, from 12 weeks post-injury to 10 years post-hospital discharge. It was found that rates of anxiety and depression had changed little over the 10-year period. Two-thirds of the sample showed no signs or symptoms of depression. Coping strategies were observed to remain relatively stable over time. The statistically significant regression models (coping strategies at week 12 post-injury) were seen to predict one-third of the variance in depression at year 10. Rates of post-traumatic psychological growth were associated with higher levels of psychological distress.

Employment after Spinal Cord Injury

Ottomanello et al. (2015) examined the association of specific vocational service activities as predictors of employment. As expected, job development and employment supports were the most time-consuming activities per appointment. Though the amount of time spent in weekly appointments did not differ by employment outcome, participants obtaining competitive employment averaged significantly more individual activities per appointment. Further, for these participants, job development or placement and employment follow-along or supports were more likely to occur and vocational counseling was less likely

to occur. Community-based employment services, including job development or placement and employment follow-along or supports as part of a supported employment model, were associated with competitive employment outcomes. One of the common methods of the general models of vocational rehabilitation, office-based vocational counseling services, showed an association with a lack of employment.

Frieden and Winnegar (2012) reviewed the literature pertaining to the employment of people who experience spinal cord injury (SCI) in the United States. Literature and findings on key factors related to employment illustrate the multiple dimensions of work environments, and health demands, that effect employment outcomes for people with SCI. Employment is important for people with SCI and valued in society. The literature reviewed indicates that researchers understand the work demands for people with SCI and may help to identify suitable supports, training and job opportunities. There remains a need for research focus on understanding future employment demands, necessary work skills, differing work environments and methods for increasing and preserving employment.

Ottomalnelli and Lind (2009) conducted a study to provide a comprehensive summary of the literature on employment rates, predictors of employment, and the benefits and barriers involved. A total of 579 articles were found and reviewed to determine the presence of reported employment rates. Of these, 60 articles were found to include a report of employment rates for individuals with SCI. Results indicated that, in studies that examined paid employment, the average rate of any employment after SCI was approximately 35%.

Correlates of Hope

Dorsett, Geraghty, Sinnott and Acland (2017) studied participants with spinal cord injury. They attempted to explore the role of hope in the coping and psychosocial adjustment process, following a spinal cord injury. A survey consisting of the Adult Hope Scale; the

Moorong Self-Efficacy Scale; the Centre for Epidemiology Studies—Depression Scale (CES-D); Life Satisfaction, Self-Rated Adjustment and Life Problems Subscales of the Life Situation Questionnaire and selected subscales from the Spinal Cord Lesion-related Coping Strategies Questionnaire (SCL-CSQ) and the COPE scales was used. A total of 47 participants with newly acquired traumatic SCI were examined at 6 weeks post injury and 3 months post discharge. Hope levels and coping strategies remained consistent over time. Hope levels significantly and positively correlated with life satisfaction and self-reported adjustment, and negatively correlated with life problems. Hope levels also positively correlated with positive coping styles, including positive reappraisal, planning, acceptance and fighting spirit. Finally, hope levels negatively correlated with the negative coping strategies behavioural disengagement and social reliance.

Philips, Smedema, Fleming, Sung and Allen (2014) tested potential strength-based mediators of functional disability and hope in a sample of adults with spinal cord injury. Two hundred and forty two participants with spinal cord injury were recruited for this study. The participants were required to complete a survey which consisted of a demographic questionnaire, as well as measures of functional disability, hope, self-esteem, proactive coping, perceived social support and disability acceptance. The results showed that proactive coping, self-esteem and perceived social support significantly medicated the relationship between functional disability and hope, while disability acceptance did not. The combination of mediators which resulted in functional disability was found to no longer remain a significant predictor of hope.

Kortte, Stevenson, Hosey, Castillo and Wegener (2012) examined the association between facilitating psychological variables and functional rehabilitation outcomes following acute medical rehabilitation. The participants were 174 adults undergoing inpatient rehabilitation for acute spinal cord dysfunction, stroke, amputation, or orthopedic surgery

recovery. The tools used were Hope Scale, Positive and Negative Affect Schedule, and Functional Independence Measure (FIM) during the first days of their inpatient stay. The same participants were later contacted, 3 months after discharge to complete the Craig Hospital Assessment and Reporting Technique (CHART) and FIM. Hope was found to play a role in prediction of functional role participation at 3 months above. Further variance was accounted for by demographic and severity variables. The positive affect was not found to contribute to the prediction of functional role participation, and neither hope nor positive affect contributed to the prediction of functional skill level (FIM).

Soundy et al. (2010) examined physiotherapists to explore the meaning of hope in neurological physiotherapy practice in a qualitative perspective. Nine female physiotherapists (43.2 +/- 8.5 years) each took part in a one-off semistructured interview. Neurological experience with patients in physiotherapy provides stories that relate to hope and this informs the way they understand it. It is important to note that, the physiotherapists recognised the need for having a realistic hope and the danger of having a false hope, when considering therapeutic outcome. However, both were balanced with the need to accept that the unknown was possible and not limiting this or losing their dream. Where hope in relation to recovery was not possible, hope in other areas of life was emphasised.

Lohne and Severinsson (2006) conducted a study to examine patients' experiences of the meaning they attribute to hope as well as hoping a year after acute spinal cord injury. Data were collected by personal interviews ($n = 10$) one year after acute spinal cord injury. The approach used to understand patients' experiences was a phenomenological–hermeneutic approach, based on the philosophy of Ricoeur. The findings pointed to the formation of one main interpretation: 'The Power of Hope', which was further examined under two sub-themes: 'Will, Faith and Hope' and 'Hoping, Struggling and Growing'. This study shows that experiences of hope were important to all participants, providing energy and

power to the process of struggling because hope is necessary for further progress and personal development.

Correlates of Pain

Afsar, Cosar, Yemisci and Cetin (2014) conducted a study which aimed to determine the prevalence of neuropathic pain in patients with spinal cord injury (SCI) during rehabilitation and follow-up. The study also examined the relationship between neuropathic pain and the demographic and clinical characteristics of the patients. Results indicated that taking into account that neuropathic pain is an important factor that affects daily living activities, SCI patients should be evaluated in detail to determine the characteristic of any pain, and the medical treatment prescribed to the patient should be closely monitored.

Boldt, Eriks-Hoogland, Brinkhof, de Bie, Joggi and von Elm (2014) examined the effects of non-pharmacological interventions for the treatment of chronic neuropathic and nociceptive pain in people living with SCI. They studied available research evidence in relation to the above topics. The researchers identified 16 trials involving a total of 616 participants. Eight different types of interventions were studied. Overall, a lack of evidence was found on any serious or long-lasting side effects of the interventions.

Cardenas and Jensen (2006) examined participants who had traumatic SCI. There were 117 participants who were 18 years of age or older, and reported a chronic pain problem included in this study. The method of assessment included different questions in relation to current or past use of 26 different pain treatments, the amount of relief each treatment provided, and the length of time that any pain relief usually lasts. It was found that the relief from the various treatments, including most medications, tended to last only minutes or hours. However, pain relief from alternative treatments such as massage, acupuncture, and hypnosis was reported to last for days in 25% to 33% of those who tried these treatments.

Cairns, Adkins and Scott (1996) conducted a study on participants with SCI to examine the relationship between pain and depression. This was examined over time during acute phases of traumatic spinal cord injury (SCI). A repeated measures design assessing subjects at admission and discharge from rehabilitation was used. One hundred twenty-one patients initially agreed to participate in a larger study of adjustment to SCI. The measures used included: a Pain assessment which used a 101-point numerical rating scale and a Depression assessment used the Center for Epidemiological Studies—Depression Scale (CESD). The results indicated that pain and depression were independent at admission. At discharge, they were significantly related. Changes in pain affected depression more than changes in depression affected pain.

Effect of Art: Music

Leubner and Hinterberger (2017) conducted a review of original research trials. This study included those trials which utilized music or music therapy as intervention to treat participants with depressive symptoms. 28 studies with a total number of 1,810 participants met the inclusion criteria and were finally selected. A reduction in depression levels was found over time, which was statistically significant, in the experimental (music intervention) group compared to a control (n = 25) or comparison group (n = 2), in 26 studies. Listening to music or participating in music therapy projects, showed impressive improvement in elderly participants. It was also notable that researchers used group settings more often than individual sessions and our results indicated a slightly better outcome for those cases. Using questionnaires related to participants confidence, self-esteem or motivation, which were additional helped to confirm further improvements after music treatment.

Silverman (2016) attempted to examine the effect of group-based educational music therapy on state hope for recovery, in acute care mental health patients. The participants (N =

169) of the study were assigned to one of three single-session conditions using cluster randomization: lyric analysis, song writing, or wait-list control. There was no significant between-group difference. A slightly higher mean pathway, agency, and total state hope scores was observed in both music therapy conditions when compared to the control condition, even within the temporal parameters of a single music therapy session. There was no between-group difference in the song writing and lyric analysis interventions.

Akinwumi and Kehinde (2015) studied patients with Spinal Cord Injury to examine the effectiveness of music therapy in the psychosocial management of SCI. This study examined 120 registered members of the Spinal Cord Injury Association of Nigeria Rehabilitation Center located in Amuwo-Odofin in Lagos. The participants received music therapy sessions in groups twice in a week for eight consecutive weeks. Findings from the study established that music therapy significantly reduced the pain experienced by spinal cord injury patients. It was also established that music therapy significantly enhanced physical, social, and spiritual well-beings of the spinal cord injury patients. However, music therapy did not significantly enhance the psychological wellbeing of the spinal cord injury patients; though the result was positive.

Zengin, Kabul, Al, Sarcan, Dogan and Yildirim (2013) conducted a study to understand the effect of a music intervention (MI) on stress hormones, physiologic parameters, pain, and anxiety state before and during port catheter placement procedures (PCPPs). One hundred oncology patients, who were randomly assigned to an MI group (n = 50) or a control group (n = 50) were included in this study. The serum cortisol and adrenocorticotropic hormone (ACTH) levels, heart and respiratory rate (HR, RR) and systolic and diastolic blood pressure (SBP, DBP), were measured. It was done both, on arrival in the surgical intervention room, as well as immediately prior to and immediately after the PCPP. In both groups these measurements were used to assess the effect of the intervention.

Furthermore, the analysis of pain and anxiety levels was done with the help of a visual analogue scale and state-trait anxiety inventory scales. Measuring the patients serum cortisol and ACTH levels, HR, RR, SBP, DBP and anxiety levels, on arrival showed no differences. Results showed the participants in the MI group, had significant reductions in hormone immediately prior to and immediately after the PCPP in when compared to those in the control group. It was also found that there was a significant reduction in pain ($p < 0.05$) and anxiety scores ($p < 0.05$) in the MI group when compared to control group.

Lin, Lin, Huang, Hsu and Lin (2011) studied the effects of music therapy on patients undergoing spinal surgery. The variables measured include anxiety, postoperative pain and physiological reactions to emotional and physical distress. Sixty participants took part in this study. The participants of the study group listened to selected music from the evening before surgery to the second day after surgery. However, participants of the control group did not listen to music. Patients' levels of anxiety and pain were measured with visual analogue scale. Physiological measures including heart rate, blood pressure and 24-hour urinalysis were performed. The study showed that in patients undergoing spinal surgery, music therapy has some positive effects on levels of anxiety and pain.

Ziv, Chaim and Itamar (2010) examined the effect of music and dispositional hope on state hope, after experiencing failure. Sixty participants filled out a dispositional hope questionnaire, and completed a computer task for which they received false failure feedback. Thirty participants listened to positive music following the task, while 30 participants did not receive the music stimulus. Participants then filled out a state hope questionnaire and a positive and negative affect scale. Results showed a significant effect of music on state hope: participants listening to positive music scored higher on state hope than participants in the control group. No significant effect for dispositional hope was found. However, an interaction between dispositional hope and music was found, such that music was shown to

affect only high dispositional hope participants, and had no effect on low dispositional hope participants. No significant effects on affect were found. Results are discussed in relation to individual differences in music's effect.

Castillo-Perez et al. (2010) examined the effects of music on depression and compared the effects if this intervention with psychotherapy. There are mainly three conventional treatments for depression: psychotherapy, pharmaceutical treatments, and electroconvulsive therapy. Using a convenience sample of 79 patients aged 25–60 years with low- and medium-grade depression a randomized controlled clinical trial was performed. The Zung Depression Scale was employed for selection purposes. Patients were assigned to the music-therapy group, or the psychotherapy group based on conductive-behavioral therapy on a random basis. The music therapy was applied for 50 min a day, every day, for eight weeks. The music-therapy group had less depressive symptoms than the psychotherapy group, at the end of the intervention and this was proven to be statistically significant with the Friedman test. This study enables us to assume that patients with low- and medium-grade depression can use music to enhance the effects of psychological support.

Masuda, Miyamoto and Shimizu (2009) performed a randomized controlled study to elucidate the effects of music listening on postoperative pain and/or stress in elderly orthopaedic patients. Forty four patients over 60 years old participated in this study and were randomly assigned to a music listening group and a control group. The patients in the music listening group were given a choice of listening to either Western classical music, Gagaku, Noh songs or Enka and did so for 20 minutes in private rooms. The effects on pain were evaluated using a Visual Analogue Scale and the Wong/Baker Faces Scale. As indicators of stress, systolic and diastolic blood pressure, heart rate and skin temperature and blood flow at the fingertip were measured. The findings suggested that listening to music may be a simple,

non-invasive method for reducing postoperative pain for elderly orthopaedic patients requiring bed rest.

Kwon, Kim and Park (2006) studied patients with leg fractures to understand the effects of music therapy on pain, discomfort and depression. Data was collected from 40 patients admitted in an orthopaedic surgery care unit. The subjects included 20 intervention group members and 20 control group members. Group members were offered the music therapy intervention once a day for 3 days for 30-60 minutes per day. Pain was measured with a numeric rating scale and by measuring vital signs. Discomfort and depression were measured with self-administered questionnaires. It was found that, patients who received music therapy had a lower degree of pain than patients who did not receive music therapy as measured by the numeric pain score ($p<0.001$), systolic blood pressure ($p<0.01$), diastolic blood pressure ($p<0.001$), pulse rate ($p<0.001$) and respiration ($p<0.001$). Patients who were provided with music therapy also had a lower degree of discomfort than patients who were not provided with this therapy ($p<0.01$).

Correlates of Art

Shella (2017) set out to examine if there were demonstrated improvements in pain, mood and anxiety levels for patients at the Cleveland Clinic. A chart review was utilized to evaluate the impact of bedside art therapy sessions with 195 patients at Cleveland Clinic, a large urban teaching hospital. The participant population included multiple medical diagnoses rather than one particular illness or condition. At this facility, patients were routinely asked to rate their perceptions of mood, anxiety and pain using a typical 5-point faces scale before and after art therapy sessions. In brief, the analysis of pre- and post-results indicated significant improvements in pain, mood and anxiety levels for all patients regardless of age, gender or diagnosis.

Babouchkina and Robbins (2015) examined whether the creation of a mandala has specific efficacy for reducing negative mood states. A convenience sample of 67 adult participants was randomly assigned to one of 4 conditions following negative mood induction: (a) coloring a blank circle with instructions to express feelings, (b) coloring a blank circle with instructions to draw freely, (c) coloring a square with instructions to express feelings, or (d) coloring a square with instructions to draw freely. The two circle (mandala) groups reported significantly greater mood improvement compared to the two square conditions. These results demonstrate that the circular shape of the mandala serves as an "active ingredient" in mood enhancement.

Stinley, Norris and Hinds (2015) conducted randomized controlled clinical trial explored the feasibility of implementing a fast-acting mandala intervention to reduce physical pain and psychological anxiety experienced during needle sticks. Forty pediatric patients participated in this two-group study: 20 participants created a mandala on an iPad (Treatment Group) and 20 participants received standard care treatment (Control Group). Results indicated clinical feasibility of using the mandala during needle sticks. Physiological stress behaviors were significantly reduced in the Treatment Group, $p = .03$, compared with the Control Group. Psychological anxiety decreased significantly in Treatment Group participants, $p = .04$. These findings support the use of mandalas created on an iPad with pediatric patients undergoing acute pain procedures.

Lipe et al (2011) examined the effectiveness an arts program for individuals with chronic mental illness served by a community "Clubhouse". Results showed that arts sessions improved feelings of well-being, and member-participants reported that sessions provided fun, relaxation, socialization, creativity and a sense of belonging. Improvements also were noted in the ability to manage self-care and in overall quality of life.

Henderson (2007) examined the healing aspects of creativity; specifically the usefulness of creating a mandala. It was theorized that mandala drawing may provide the cognitive integration and organization to complex emotional experiences that yield a sense of personal meaning as well as serving as a mechanism of therapeutic exposure, as does the written disclosure task. By reviewing research in this field and attempting to duplicate previous research, this study used undergraduate college students as participants who met the criteria for Post Traumatic Stress Disorder (PTSD). The benefits were measured in terms of changes in PTSD symptom severity, depression, anxiety, spiritual meaning, affect, and the frequency of occurrence of physical symptoms and illness. Contrary to expectation, the current study failed to replicate previous results revealing statistically significant outcome differences for the mandala group. In fact, the finding was reversed in that the control group (drawing three objects or a kind of art therapy) showed a significant drop in PTSD symptoms at one-month follow up.

Puig et al (2006) conducted pilot study to explore the efficacy of a complementary creative arts therapy intervention to enhance emotional expression, spirituality, and psychological well-being in newly diagnosed breast cancer patients. Thirty-nine women with Stage I and Stage II breast cancer were randomly assigned to an experimental group who received individual creative arts therapy interventions or a control group of delayed treatment. The results obtained, indicated that the intervention was not an effective method of enhancing the emotional approach coping style of emotional expression or level of spirituality of subjects in this sample. However, it was also seen that participation in the creative arts therapy intervention enhanced psychological well-being. This was done by decreasing negative emotional states and enhancing positive ones of experimental group subjects.

Long (2004) implemented art therapy as a means of pain modulation. A Case Study of a 79-year-old woman who was severely incapacitated by arthritis in her shoulders was done. The nature of her pain was identified through colour and to externalize it through visual representation as metaphor. Once the woman was able to express and depict her pain, she was seen to have likened the pain in her shoulders to a clawed "pain monster". She was then motivated to depict her pain monster as well as illustrate through the art how she would defeat it. As the client found a way to vanquish the pain monster in her art, simultaneously the pain in her shoulder subsided. This method was also used in conjunction with processing relevant psychological material that arose during therapy to address other painful areas in the woman's body.

Henare, Hocking and Smythe (2003) reports the findings of a phenomenological study into the meaning of chronic pain for 14 people who were attending a pain management programme in New Zealand. The data for the study comprised artwork produced by the participants in the course of the programme and their explanation of its meaning. Five main themes emerged from the data analysis: gaining pain and losing self, redefining self, identity through others, being hopeful and being on a journey. The study found a strong association between participation in valued occupation, the maintenance and redefinition of identity, experiencing oneself as competent and being hopeful about the future. The research process supported the use of art as an expressive medium in occupational therapy.

Method

Chapter 3

Method

The study on 'Effect of Art on Individuals undergoing Physiotherapy' was carried out in the following steps:

- Operational Definitions
- Objectives
- Research Questions
- Alternate Hypotheses
- Area of the Study
- Sample
- Tools
- Procedure
- Analysis of Data

Operational Definitions

Hope. Hope is an emotion characterized by positive feelings about the immediate or long-term future.

Psychological flexibility. Psychological flexibility refers to the ability to contact the present moment more fully as a conscious human being and to change, or persist in, behaviour when doing so serves valued ends.

Physiotherapy. Physiotherapy refers to major health profession involved in rehabilitation, which helps patients to take an active part in their return to function.

Art. Art refers to an expression or application of human creative skill and imagination, typically in a visual form, producing works to be appreciated primarily for their beauty or emotional power.

Objectives

- To assess the level of Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy
- To study the relationship between Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy
- To study the difference in Hope and Psychological Inflexibility in Pain among Individuals before and after the intervention of Music or Mandala Coloring
- To study the difference in Feedback among Individuals before and after the intervention of Music or Mandala Coloring
- To study the difference in Hope and Psychological Inflexibility in Pain between Individuals of different Centres
- To study the difference in Hope and Psychological Inflexibility in Pain among Individuals based of Nuclear Family and Joint Family

Research Questions

- What is the level of Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy?
- What is the relationship between Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy?
- What is the effect of psychological intervention on the level of Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy?

- What is the difference in Feedback among Individuals before and after the intervention of Music or Mandala Coloring?
- What is the effect of Centre on the level of Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy?
- What is the effect of the Type of Family on the level of Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy?

Alternate Hypotheses

The Hypotheses is stated as alternate hypotheses, so that they can be analysed based on results.

1. The level of Hope is low among Individuals undergoing Physiotherapy
2. The level of Psychological Inflexibility in Pain is high among Individuals undergoing Physiotherapy
3. There will be a significant relationship between Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy
4. There will be a significant difference in Hope among Individuals before and after the intervention of Music or Mandala Coloring
5. There will be no significant difference in Psychological Inflexibility in Pain among Individuals before and after the intervention of Music or Mandala Coloring
6. There will be a significant difference in the Feedback among Individuals before and after the intervention of Music or Mandala Coloring
7. There will be a significant difference in Hope and Psychological Inflexibility in Pain between Individuals of the two Centres
8. There will be a significant difference in Hope and Psychological Inflexibility in Pain between Individuals of Nuclear Family and Joint Family

Area of the Study

The area selected to conduct the study was Coimbatore. The reasons for selecting these areas were

- Availability of the sample
- Willingness and cooperation of the organization and the participants

Sample

Thirty three patients (28 Paraplegics and 5 Quadriplegics) from two Spine Injury Rehabilitation Centres of Coimbatore were selected for the study. Purposive Sampling Method (Non-probability sampling) was used to collect the data.

Inclusion Criteria

- Individuals above 15 years of age
- Individuals undergoing physiotherapy
- Individuals receiving residential treatment
- Men and women participants

Exclusion Criteria

- Individuals below 15 years of age
- Individuals not undergoing physiotherapy
- Individuals receiving home based care or outpatient services

Tools

Informed Consent Form and Confidentiality Statement. This form provides an understanding of the project to the participants and helps the investigator understand their willingness to participate. If they were willing to participate a guarantee to maintain

confidentiality of their information and identity was provided. Each participant was provided with the form while the investigator explained the nature of the study and cleared any doubts related to the study, before they signed the consent form.

Personal Profile Sheet. A Personal Profile Sheet was used to obtain the Name, Age, Sex, Marital Status, Type of Family, Type of Injury and Duration of Stay at the Center. This helps the investigator build rapport as well as to collect the required Demographic Data for the study.

Domain Specific Hope Scale (DSHS). The Domain Specific Hope Scale (DSHS) by Sympson (1999) measures an individual's level of dispositional hope in relation to 6 life areas – social, academic, family, romance/relationships, work/occupation and leisure activities. Out of these 6 areas, only 3 subscales were used in this study, due to the inclusion of individuals of different age groups in the study. The study used the subscales on: Social, Family and Leisure Activities. Each subscale is of 8 items each. Responses were to be provided in an 8-point scale ranging from Definitely False (1) to Definitely True (8). Scores for each of the life areas can be obtained by summing up the 8 items within each life area. The total score for the DSHS is obtained by summing up the scores across all the life areas. The reliability of the scale is 0.93 and has demonstrated adequate concurrent construct validity.

Psychological Inflexibility in Pain Scale (PIPS). The Psychological Inflexibility in Pain Scale (PIPS) by Wicksell, Renofalt, Olsson and Melin (2008) is a 16-item scale used to assess psychological inflexibility in people with chronic pain. The concept of psychological inflexibility as per this scale includes the concepts of avoidance, acceptance, fusion, values orientation and dirty discomfort. The two main components that are measured in this scale are: Avoidance of Pain and Fusion with Pain Thoughts,

which are measured using 10 and 6 items respectively. The individuals are required to respond on a 7-point scale, ranging from Never True (1) to Always True (7). Higher scores indicate greater levels of psychological inflexibility. The reliability of this scale is 0.89 and the validity is 0.46.

Visual Analogue Feedback Scale. The Visual Analogue Feedback Scale was designed by the investigator to collect the overall feedback of the participants. This scale used a range of 0 to 100. After the collection of Post Test Data, the participants were asked to use the scale to share their opinion regarding how they felt before and after the intervention sessions. They were asked to mark on the scale, how they felt before the intervention using 'B'-Before and how they felt after the intervention using 'A'- After. This would provide a simple and quick means to understand the extent to which the individuals enjoyed the sessions and perceived any change as a result of the intervention.

Procedure

From two Spine Injury Rehabilitation Centres at Coimbatore, Tamil Nadu, 33 patients with Spinal Injury, undergoing physiotherapy were selected by Purposive Sampling method. To begin with, rapport was established with all the individuals as a group, after which the Informed Consent Form and Confidentiality Statement, Patient Information Sheet, Domain Specific Hope Scale and Psychological Inflexibility in Pain Scale were administered on all the participants, in a group setting.

The individuals enrolled in the study were divided into two groups, one group listened to Music and the second did Mandala Colouring. The division of the individuals into the two respective groups were not based on any specific criteria but was done by taking into consideration the individual's ability to do the task, his/her interest for the activity and the opinion of the psychologist/social worker at the centre. At the end of each session, oral

feedback and suggestions for any change/improvement of the sessions was discussed with the participants.

After conducting 6 sessions for each group, the individuals were re-administered with the Domain Specific Hope Scale and Psychological Inflexibility in Pain Scale. They were also asked to mark their feedback regarding the sessions on a Visual Analogue Feedback Scale. Any doubts regarding the intervention was cleared and the investigator terminated the study.

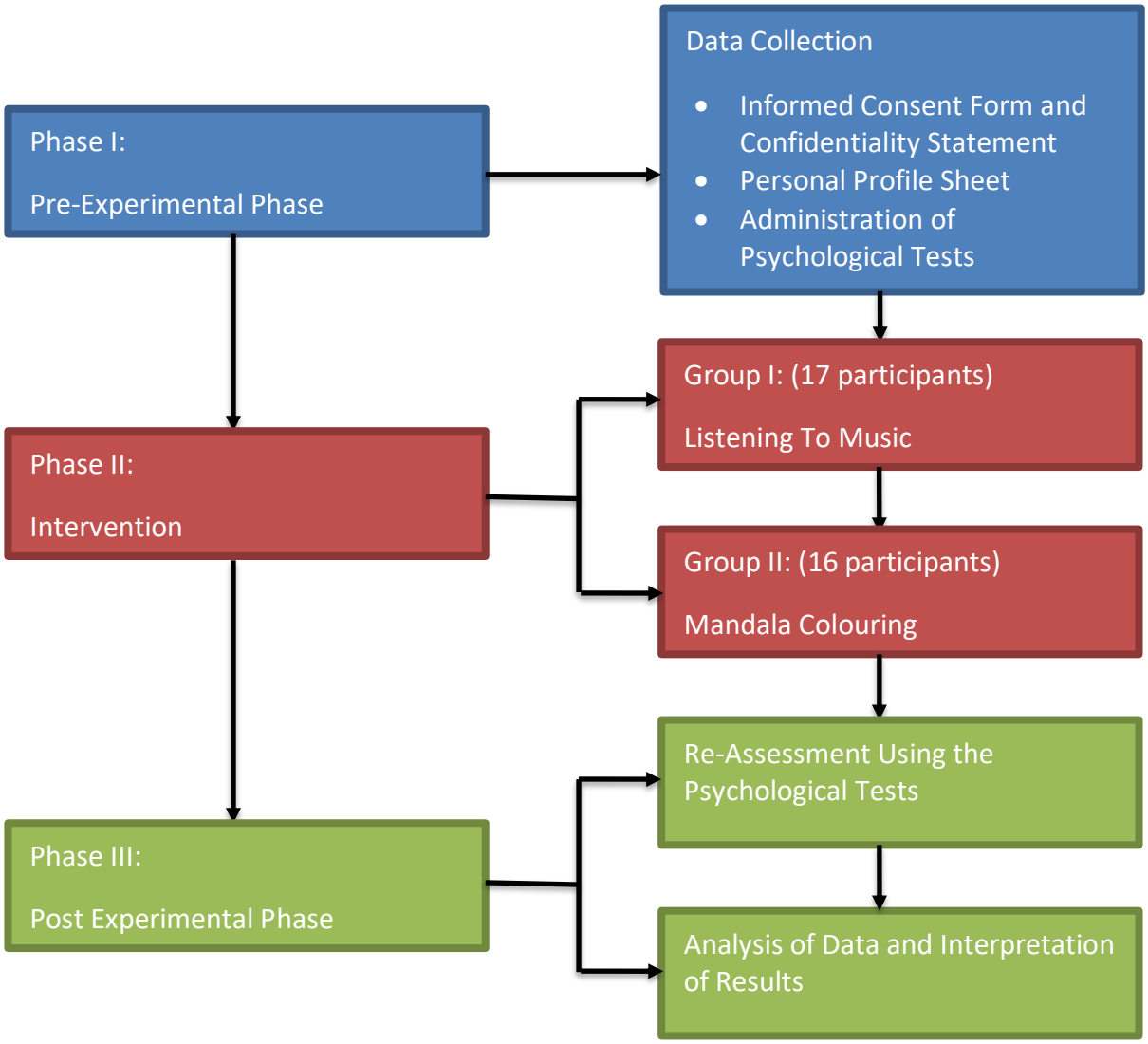

Figure 1

Flow Chart

Psychological Intervention

Music. In this psychological intervention, the participants listened to Music. It was conducted as a group intervention. The participants were seated comfortably in their wheelchairs in a quiet room and stimulated to listen to Music for relaxation with inbuilt Autosuggestions.

Step 1: Deep Breathing. The participants were asked to close their eyes as they count down from 4 to 1. They were then asked to take deep breaths following the counting, i.e. breathing in for 4 counts and breathing out for 6 counts. This deep breathing was done thrice at the end of which the music was played.

Step 2: Music and Autosuggestions. In this study, the participants experienced 15 minutes of music along with autosuggestions being given at regular intervals. The music used for this study included three types of Instrumental Music. The three types of music used are as follows:

1. A combination of natural sounds and instrumental music
2. Flute Music
3. Piano Music

When the music playing commenced the participants were given the following autosuggestion:

"You are in a place you like, with the people you love. You are not troubled by any worries. You are feeling relaxed and happy."

The same autosuggestion was repeated at regular intervals of 5 minutes during the 15 minutes of music.

Step 3: Termination and Feedback. At the end of 15 minutes, the volume of the music was gradually decreased. The participants were asked to slowly open their eyes after counting 4 to 1. They were then asked to share their experience during the session. Furthermore, they were asked about the feelings and thoughts they had during the process. Suggestions for improvement were also welcomed.

Mandala Colouring. In this psychological intervention, the participants were given sheets of pre-drawn Mandalas to fill up with colors. It was conducted as a group intervention. The participants were assembled in a room where they could color comfortably and share the materials as well. Once they were comfortably settled, they were given a sheet each. The participants were given a period of 30 minutes to perform the task but were not required to complete the whole Mandala.

The participants were free to choose the colours to fill the pre-drawn Mandala for the first three days. On the fourth day, they were asked to use only two colours each to fill the pre-drawn Mandala. The use of designs to fill the diagram was suggested on the fifth day. On the final day, the participants were given a reference diagram and asked to draw the same Mandala which was provided on the reference sheet. Therefore, a mix of unstructured and semi-structured sessions of Mandala Colouring was given to the participants of this group.

Analysis of Data

The data was analysed by using SPSS 16.0 package. The Mean, Standard Deviation, t-test and Correlation were computed.

Results and Discussion

Chapter 4

Results and Discussion

The study on 'Effect of Art on Individuals undergoing Physiotherapy' was conducted in Spine Injury Rehabilitation Centres at Coimbatore, Tamil Nadu. Thirty three patients (28 Paraplegics and 5 Quadriplegics) from two Spine Injury Rehabilitation Centres of Coimbatore, Tamilnadu were selected for the study. The participants' age ranges from 15 to 62 years.

The results of the study were analysed, tabulated and discussed.

Table 1

Demographic Data of Individuals undergoing Physiotherapy (N=33)

Demographic Variable		Numbers	Percentage
Gender	Male	30	90.9
	Female	3	9.1
Age	Below 40 years	21	63.6
	40 years and above	12	36.4
Marital Status	Unmarried	10	30.3
	Married	23	69.7
Type of Family	Nuclear	22	66.7
	Joint	11	33.3
Type of Injury	Paraplegic	28	84.8
	Quadriplegic	5	15.2
Duration of Stay	Below 30 days	23	69.7
	30 days and above	10	30.3
Centre	Centre 1	23	69.7
	Centre 2	10	30.3

The analysis and documentation of the demographic data collected form the participants is an important aspect in the study. This data helps to provide an insight into other influencing factors which the investigator may not have included in the study. The participants in the current study present a male to female ratio of 10:1. It can be seen that more number of participants are below the age of 40 years. This data is in line with the statistics stating that the average age for SCI to occur is between 16 and 30 years of age (Muldoon et al., 2015). Most of the participants are married and live in nuclear families. In the study, there are 28 paraplegic participants and 5 quadriplegic participants. The duration of stay of most participants included in the study was less than 30 days. Of the two centres included in the study, 23 participants were from SAHAI Trust and 10 participants were from Ganga Rehab Centre. The above data gives a comprehensive outline of the general information of those participants included in this study. It also helps to understand to a certain extent their social support system and their ability to take part in the intervention.

Table 2

Level of Hope among Individuals undergoing Physiotherapy (N=33)

Hope	Number	Percentage
Low	1	3.0
Moderate	10	30.3
High	22	66.7

Hope is an aspiration or yearning for a dream to come true. So it is the hope of the Spinal Cord Injury patient to recover from the disability. The table indicates the level of hope in participants undergoing Physiotherapy. The concept of high hope is at 66.7% in the sample. Every participant is optimistic. Being an integral part of the patients' existence they

hoped constantly, however, for different things at different time (Lohne, 2001). Hence, the hypothesis 1, 'The level of Hope is low among Individuals undergoing Physiotherapy', is rejected.

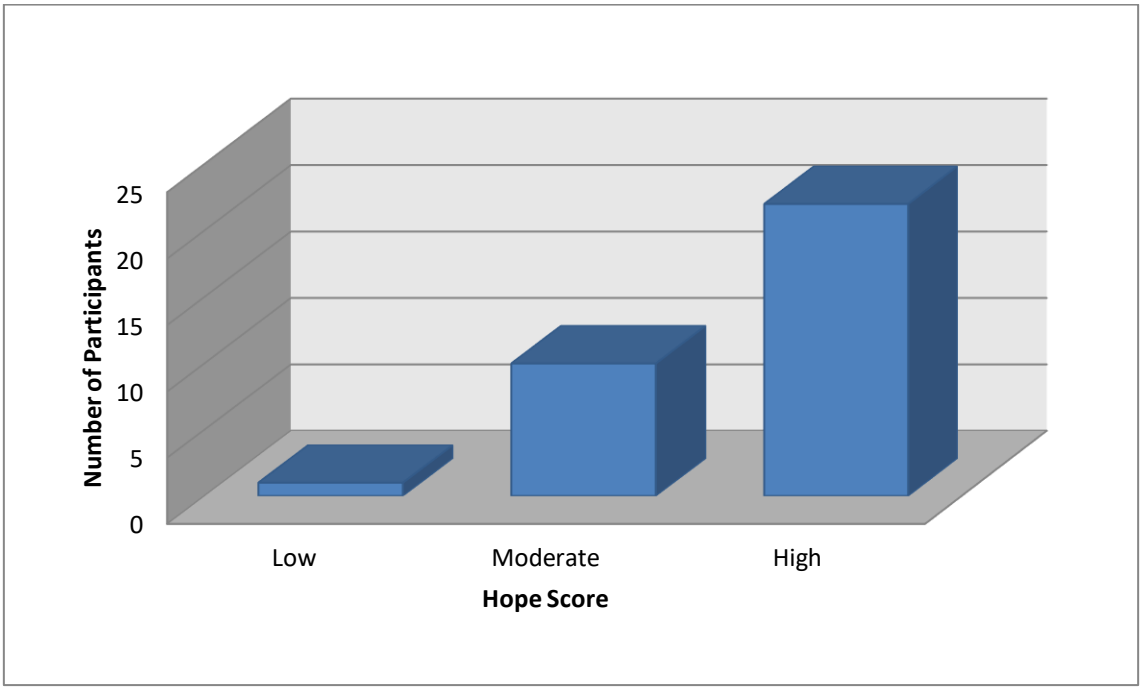

Figure 2

Level of Hope among Individuals undergoing Physiotherapy

Table 3

Level of Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy (N=33)

Psychological Inflexibility in Pain	Number	Percentage
Low	2	6.1
Moderate	11	33.3
High	20	60.6

Psychological inflexibility refers to an individual's inability to adapt to changing situations and reconfigure mental resources when required. For those with SCI, it can be understood that psychological flexibility is needed in order to accept and adjust to life's changing demands, in the light of their injury and the process of life-long disability. When assessed at the beginning of the study, a high level of psychological inflexibility was experienced by 60.6% of the participants. This finding of this study is in line with the results of a similar longitudinal study on the prevalence of severity of pain in SCI, in which Siddall et al. found that 91% of those studied reported pain at 2 weeks following injury and 64% still had pain at 6 months following the injury. Hence, the hypothesis 2, 'The level of Psychological Inflexibility in Pain is high among Individuals undergoing Physiotherapy', is accepted.

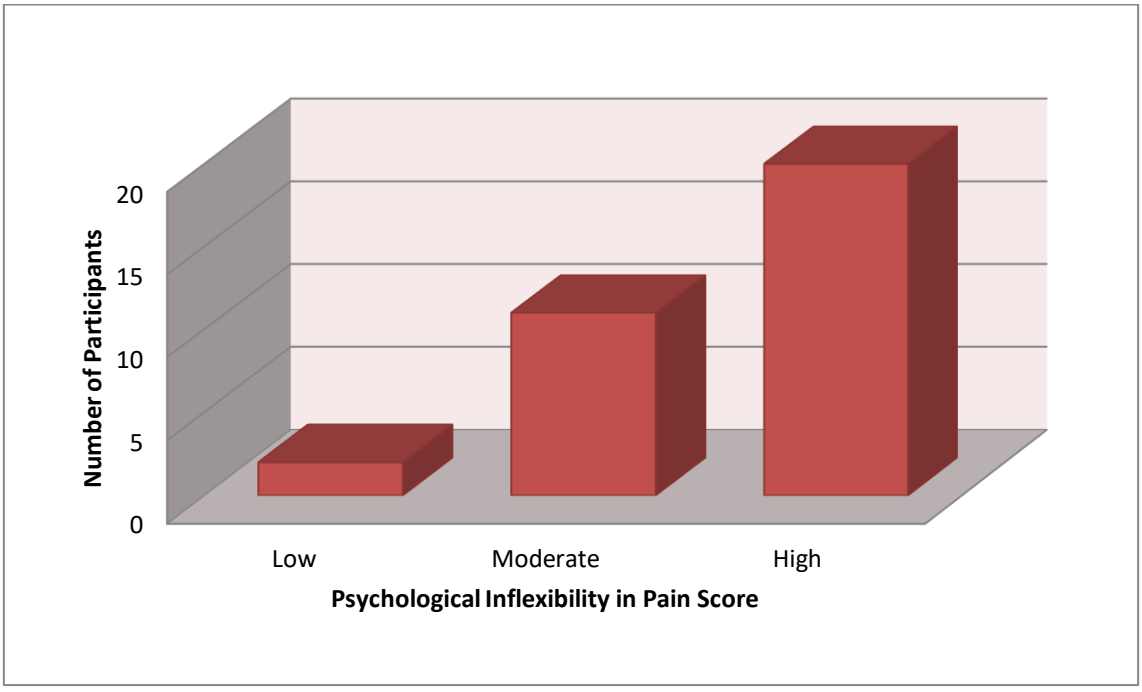

Figure 3

Level of Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy

Table 4

Relationship between Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy (N=33)

		Hope		
		Social	**Family**	**Leisure**
Psychological Inflexibility in Pain	Avoidance of Pain	-0.04	0.23	0.49**
	Fusion with Pain Thoughts	0.03	-0.17	0.26

** Significant at 0.01 level

Hope is understood as a positive expectation about the future and psychological inflexibility indicates how the person accommodates to changes in life. It is but natural that Psychological Inflexibility in Pain is likely to lower the prospect of Hope in a person as that seems to dominate the situation. For an individual with SCI, it is required that hope be modified to a realistic level, consistent with their injury. These individuals also need to reconcile themselves to their situation and accept it even under disagreeable circumstances for which psychological flexibility plays a major role (Lohne, 2001). The findings of this study indicate a significant relationship between the Leisure Subscale of Hope and the Avoidance Subscale of Psychological Inflexibility in Pain at 0.01 level, indicating that distraction or mindful involvement does help to combat pain.

In a similar study it has been indicated that the engagement in art therapy helps to redirect patients' attention away from pain into other activities. It has been shown that using various forms of art, whether it be music, drawing, etc. is beneficial and art therapy can become an invaluable "tool of empowerment" when faced with painful experiences. Art is seen as a break from reality (Phaneuf, 2013). Therefore, the results of this study can be explained that by engaging in Leisure activities or having a high level of Hope in the Leisure Subscale helps the participants avoid perceiving pain by redirecting their thoughts and actions

into activities like listening to music or mandala colouring. Hence, the hypothesis 3, 'There will be a significant relationship between Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy', is partially accepted due to the Leisure subscale.

Table 5

Effect of Art on Hope among Individuals undergoing Physiotherapy (N=33)

Variable		Before Intervention (Mean) (S.D)	After Intervention (Mean) (S.D)	t value	Significance
Hope	Social	46.70 (12.17)	49.52 (10.16)	1.54	$0.13^{n.s}$
	Family	49.24 (12.88)	49.45 (9.29)	0.12	$0.91^{n.s}$
	Leisure	49.12 (8.42)	49.91 (8.26)	0.39	$0.69^{n.s}$

n.s. Not Significant

Hope is an expectation, experienced by one and all in different phases of life. But hope is expressed by persons with SCI is one of aspiration and craving for optimistic outcome as it is the result of cruciating pain due to injury. The data indicates that the effect of art intervention, namely Music and Mandala Colouring, seem to influence the socialization in the participants. It is observed that the mean of 46.70 in the Social subscale, before intervention increased to 49.52, after intervention. This may be attributed to the intervention being rendered in a group which help the participants to see the common features with others. On the other hand, the subscale of Family and Leisure show negligible mean difference before and after the intervention. The reaction of the family members by the participant may be perceived as sympathy. The subscale of Leisure again is one of self-occupation to fight

boredom and therefore short lived. Nevertheless due to paucity of time, greater shift was not possible. The justification for the above result is in line with the previous studies proving that participation in the creative arts therapy intervention enhances psychological well-being by decreasing negative emotional states and enhancing positive ones in the experimental group subjects (Puig et al, 2006).

The intervention of art (music and mandala colouring) used in the current study, provided the participants with a different form of leisure time activity. It also enabled the participants to interact with their peers and caregivers in a cooperative manner during the sessions. As per the results of the study, there is no significant change in the levels of Hope after the intervention. Although there is a difference in the mean level of hope before and after the intervention, a lack of significant results may be due to the large variance in the participants included in the study. Furthermore, it is possible that with more number of sessions over a longer period of time can provide significant changes in the level of hope in these participants. In a similar study it has been found that the rehabilitation period was not a linear experience, but patients experienced the process as good and bad days. Although hope was an integral part of their life, these patients were known to hope for different things at different times (Lohne, 2001). Hence, the findings of this study can be explained as result of the interaction of many factors.

The important thing however, is not the beauty of the final product but the process which enables the patient to concentrate or focus on themselves, to express themselves, to reduce stress and negative thoughts and to develop self-confidence (Thaut & McIntosh, 2010). The participants of this study shared their experiences with regard to the intervention sessions. In their statements, they claimed to experience a sense of calmness and relaxation during the intervention sessions of music. They also stated that they had positive thoughts

during the session. For those who took part in the intervention of mandala colouring, it was seen that they were focused on the task during the whole sessions. Interactions with these participants indicated that they did not have any distracting thoughts related to their injury or future implications during the session. They enjoyed the process of colouring as well as interacting with their peers and care givers while doing so. These sessions provided many of the participants an opportunity to re-start and experience their love for art, especially drawing and colouring. Therefore, in spite of a lack of significant change in the level of hope, the investigator can state that there was some level of positive effect of the interventions on the life and mental health of the participants included in the study. Hence, the hypothesis 4, 'There will be a significant difference in Hope among Individuals before and after the intervention of Music or Mandala Colouring', is rejected.

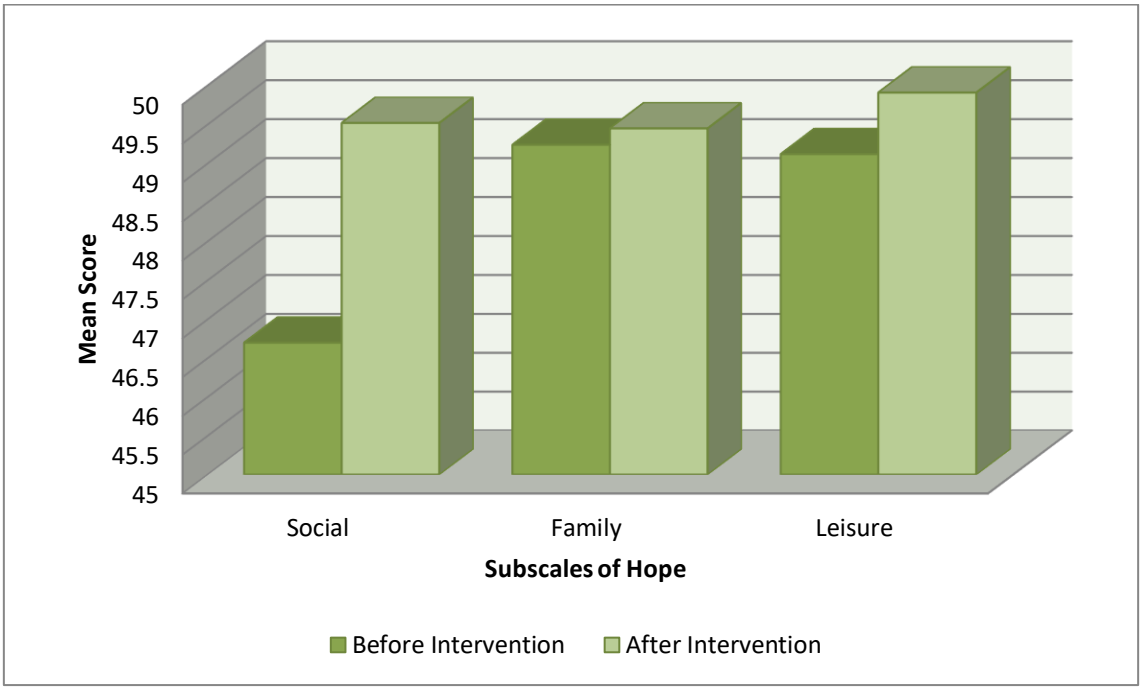

Figure 4

Mean Score of Hope among Individuals undergoing Physiotherapy before and after intervention of Music or Mandala Colouring

Table 6

Effect of Art on Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy (N=33)

Variable		Before Intervention (Mean) (S.D.)	After Intervention (Mean) (S.D.)	t value	Significance
Psychological Inflexibility in Pain	Avoidance of Pain	43.61 (12.30)	44.18 (15.21)	0.26	$0.79^{n.s}$
	Fusion with Pain Thoughts	35.61 (4.79)	37.24 (4.16)	1.76	$0.08^{n.s}$

n.s. Not Significant

The immutable pain experienced by the SCI participants causes psychological inhibition of emotion. The two subscales of Psychological Inflexibility in Pain Scale, Avoidance of Pain and Fusion with Pain Thoughts is debilitating soaring one's enthusiasm to think positive. The increase in the mean value of the Psychological Inflexibility in Pain scores after the intervention maybe because people with chronic pain restrict their activities over time. Resultantly, they become less physically fit and involving in even minor activities can cause increased pain (Cleveland Clinic, 2018).It may also be due to the fact that most of the participants included in the study were new to the process of rehabilitation. Hence, they experienced an increase in the level of pain while progressing into the higher levels of rehabilitation or physiotherapy exercises. The mean as observed from the data shows a negligible difference in Avoidance of Pain as it is physically being experienced, while Fusion with Pain Thoughts can be distracted intentionally as is observed from the intervention of art (music and mandala colouring), which is used to draw away the attention intentionally by the researcher from pain.

The lack of significant change in the level of Psychological Inflexibility in Pain can be attributed to the fact that no two people experience the same emotions or level of pain after surviving a spinal cord injury. Each individual undergoes a rehabilitation process, specially tailored to match his/her type and severity of injury based on the levels of functionality that they can attain. Moreover, similar studies on the effectiveness of non-pharmacological interventions for the treatment of pain in individuals with SCI resulted in a lack of evidence was found on any serious or long-lasting side effects of the interventions. Therefore, the results of this study are in line with that of previous research (Boldt, et.al., 2014). Hence, the hypothesis 5, 'There will be no significant difference in Psychological Inflexibility in Pain among Individuals before and after the intervention of Music or Mandala Colouring', is accepted.

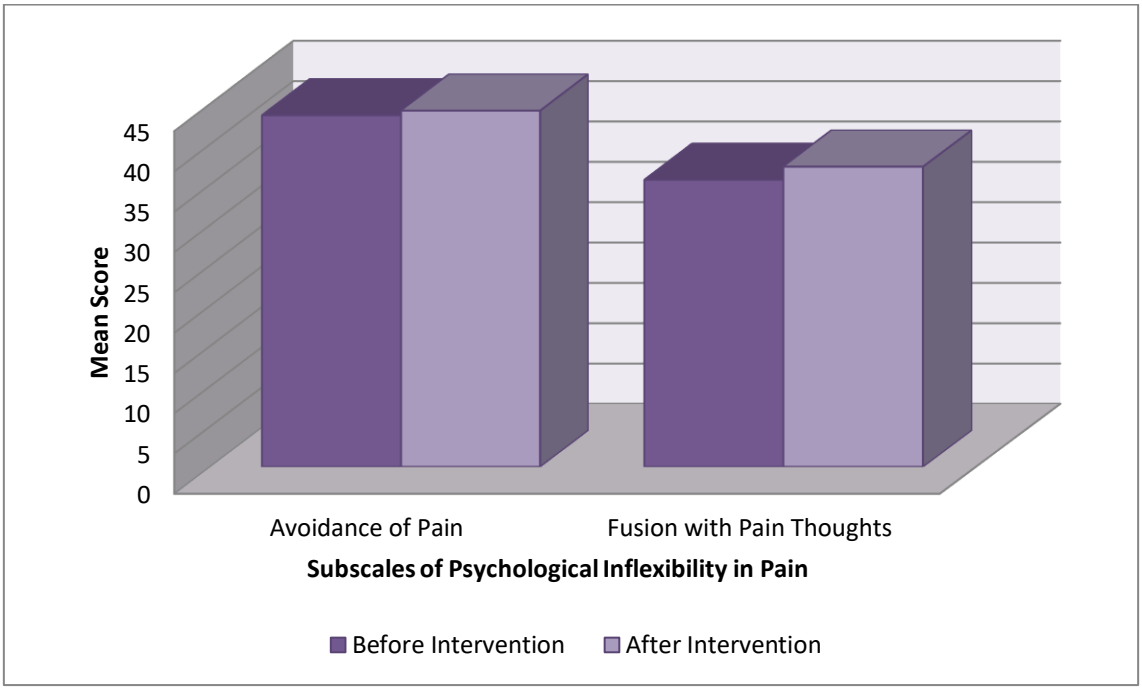

Figure 5

Mean Score of Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy before and after intervention of Music or Mandala Colouring

Table 7

Effect of Art on Visual Analogue Feedback Scale Scores among Individuals undergoing Physiotherapy (N=33)

Variable	Before Intervention (Mean)	After Intervention (Mean)	t value	Significance
Feedback	32.36	68.64	5.90	0.00**

** Significant at 0.01 level

The use of art (music and mandala colouring) as an intervention is proven to have a positive impact of various psychological variables. The results of the present indicate a positive change in the feedback of the participants after the intervention. This result signifies that the participants involved in this study enjoyed the intervention sessions and felt some positive impact psychologically. Moreover, the participants found it easy to express themselves comprehensively on this scale, i.e. the extent to which they perceived a change in themselves at the end of the intervention sessions. In a similar study the use of a Visual Analogue Scale and the Wong/Baker Faces Scale to evaluate effects of music listening on pain suggested that listening to music may be a simple, non-invasive method for reducing postoperative pain for elderly orthopaedic patients requiring bed rest (Masuda, Miyamoto and Shimizu, 2009). Thus the current findings are supported by the results obtained from similar research conducted previously. Hence, the hypothesis 6, ‘There will be a significant difference in the Feedback among Individuals before and after the intervention of Music or Mandala Colouring’, is accepted.

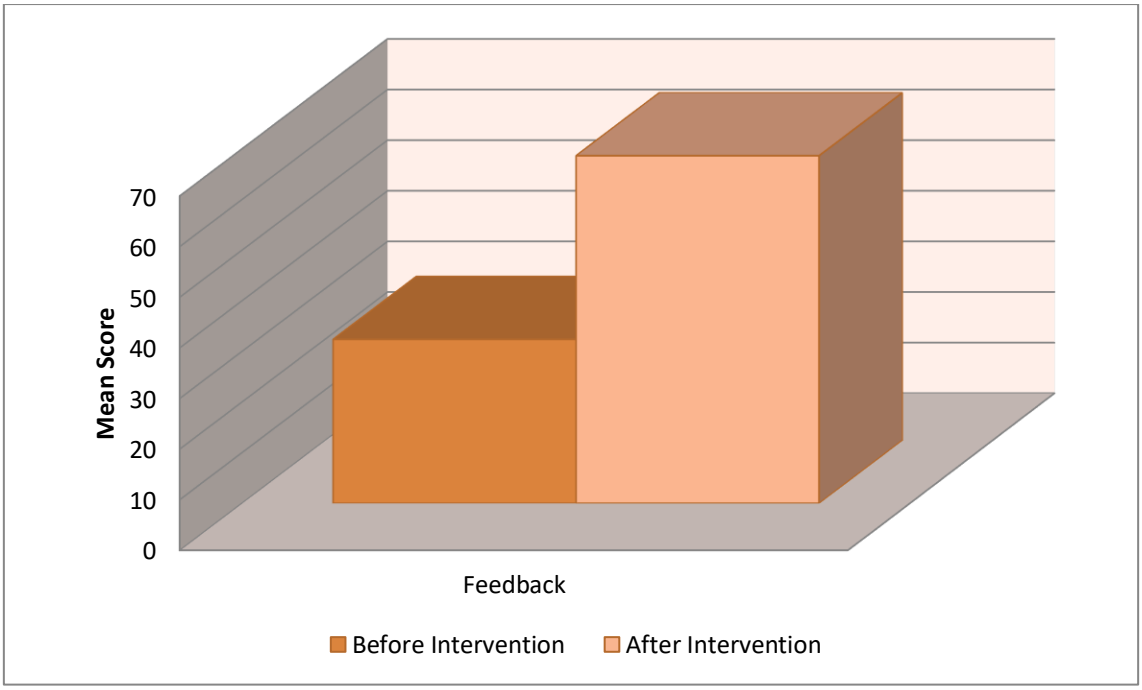

Figure 6

Mean Score of Feedback among Individuals undergoing Physiotherapy before and after intervention of Music or Mandala Colouring

Table 8

Effect of the Centre on Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy (N=33)

Variable	Centre 1 (Mean)	Centre 2 (Mean)	t value	Significance
Social (Hope)	43.96	53.00	2.06	0.04*
Avoidance of Pain (Psychological Inflexibility in Pain)	47.96	35.50	2.30	0.03*

* Significant at 0.05 level

Every individual's behaviour is a result of the individual's nature and nurture. This makes it important to take into consideration the environmental factors when conducting research. In the current study, the participants at two different centres show a significant difference in the Social Domain of Hope and Avoidance of Pain scores. During the process of the study, it was observed by the investigator that the interaction among clients, in each of the two centres, was different. It was also observed that one centre had rooms for two or more clients which would have fostered a social interaction among them. Consequently, this could be the reason why the Social Domain of Hope and Avoidance of Pain scores differ between participants of the two different Centres. Hence, the hypothesis 7, 'There will be a significant difference in Hope and Psychological Inflexibility in Pain between Individuals of the two Centres', is accepted.

Table 9

Effect of the Type of Family on Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy (N=33)

Variable		Nuclear Family (Mean)	Joint Family (Mean)	t value	Significance
Psychological Inflexibility in Pain	Avoidance of Pain	38.36	55.82	3.66	0.00**
	Fusion with Pain Thoughts	36.09	39.55	2.41	0.02**

** Significant at 0.01 level

The social support system of an individual mainly centres on their family and friends. The findings of this study indicate that there a significant difference in Psychological Inflexibility in Pain among participants of Nuclear Family and Joint Family. It is observable

from the mean scores that those from Joint Families have higher scores when compared to those of Nuclear Families. This maybe because nuclear families tend to be more close knit and consequently, provides more support to the individual. In nuclear families, the emotional fulfilment and security becomes equally comforting and apt for an individual's wellbeing (AptParenting, 2018). In a similar study the patients who reported having non-supportive families tended to show more pain behaviors and more emotional distress compared with pain patients coming from supportive families (Jaimason & Virts, 1990). The results obtained from this study are therefore, in line with the research findings of other similar studies. Hence, the hypothesis 8, 'There will be a significant difference in Hope and Psychological Inflexibility in Pain between Individuals of Nuclear Family and Joint Family', is accepted.

Summary and Conclusion

Chapter 5

Summary and Conclusion

The study on 'Effect of Art on Individuals undergoing Physiotherapy' was carried out with the following objectives:

- To assess the level of Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy
- To study the relationship between Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy
- To study the difference in Hope and Psychological Inflexibility in Pain among Individuals before and after the intervention of Music or Mandala Coloring
- To study the difference in Feedback among Individuals before and after the intervention of Music or Mandala Coloring
- To study the difference in Hope and Psychological Inflexibility in Pain between Individuals of different Centers
- To study the difference in Hope and Psychological Inflexibility in Pain among Individuals based of Nuclear Family and Joint Family

The study was conducted in two Spinal Cord Rehabilitation Centres at Coimbatore, Tamilnadu. Thirty three participants (28 Paraplegics and 5 Quadriplegics) were selected for the study. The participants were selected using Purposive Sampling Method (Non-probability sampling), so as to fulfil the inclusion and exclusion criteria. The Informed Consent Form and Confidentiality Statement were distributed to participants to obtain one's consent to participate in the study and ensure confidentiality of the information. The tools adopted to collect data included Personal Profile Sheet, Domain Specific Hope Scale, Psychological

Inflexibility in Pain Scale and the Visual Analogue Feedback Scale, designed by the investigator.

Hypotheses

1. The level of Hope is low among Individuals undergoing Physiotherapy
2. The level of Psychological Inflexibility in Pain is high among Individuals undergoing Physiotherapy
3. There will be a significant relationship between Hope and Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy
4. There will be a significant difference in Hope among Individuals before and after the intervention of Music or Mandala Coloring
5. There will be no significant difference in Psychological Inflexibility in Pain among Individuals before and after the intervention of Music or Mandala Coloring
6. There will be a significant difference in the Feedback among Individuals before and after the intervention of Music or Mandala Coloring
7. There will be a significant difference in Hope and Psychological Inflexibility in Pain between Individuals of the two Centers
8. There will be a significant difference in Hope and Psychological Inflexibility in Pain between Individuals of Nuclear Family and Joint Family

Findings of the Study

- There is a high level of Hope among Individuals undergoing Physiotherapy
- There is a high level of Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy

- There is a significant relationship between the Leisure Subscale of Hope and Avoidance Subscale of Psychological Inflexibility in Pain among Individuals undergoing Physiotherapy
- There is no significant difference in Hope among Individuals before and after the intervention of Music or Mandala Coloring
- There is no significant difference in Psychological Inflexibility in Pain among Individuals before and after the intervention of Music or Mandala Coloring
- There is a significant difference in the Feedback among Individuals before and after the intervention of Music or Mandala Coloring
- There is a significant difference in the Social Subscale (Hope) and Avoidance of Pain Subscale (Psychological Inflexibility in Pain) between Individuals of the two Centres
- There is a significant difference in the Psychological Inflexibility in Pain between Individuals of Nuclear Family and Joint Family

Conclusion

The results show that an intervention of art (music and mandala colouring) has a positive impact on the Individuals undergoing Physiotherapy. The study highlights the need to take efforts in order to include such interventions as a part of mainstream rehabilitation. These interventions should be provided for a longer duration or more number of sessions in order to provide significant results with regard to Hope and Psychological Inflexibility in Pain.

Recommendations

Recommendations suggested by the findings of the present study are as follows:

- To recognize the need of psychological interventions for Individuals undergoing Physiotherapy.
- To include art as an intervention in mainstream rehabilitation.
- To provide opportunities to the participant to attend more number of sessions of such interventions.

Limitations of the Study

- It was a time-bound study.
- A larger number of participants could not be included in the study as many individuals were not available till the completion of the intervention.
- Other extraneous variable that influence Hope and Psychological Inflexibility in Pain have not been studied owing to practical difficulties.

Suggestions for Further Research

- The sample size can be increased to get a true representation of the population.
- The duration of the Experimental Phase could be longer in order to provide a significant difference in the level of psychological variables of the participants.
- Other extraneous variables that influence Hope and Psychological Inflexibility in Pain can be studied.
- Other dependant variables such a Alexithymia, Happiness, Depression, Anxiety, Quality of Life, etc. could have been studied along with the variables considered in the present study.

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Appendices

Appendix A

Informed Consent Form

Consent to participate in a research study

Conducted by the Dept. of Psychology, Avinashilingam University for Women, Coimbatore.

Title of project: Effect of Art on Individuals undergoing Physiotherapy

Researcher: Ms. Sruthi Suresh M.Sc. in Counselling Psychology,
Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore – 641 043.

Research Guide: Dr. N.S .Rohini, Head of the Department, Dept. of Psychology,
Avinashilingam Institute for Home Science and Higher Education for Women,
Coimbatore – 641 043.

I have been asked to participate in a research study conducted by Ms. Sruthi Suresh (09487374163) and Dr. N.S. Rohini (09443044218).

Introduction

In this consent form, I will learn about the proposed research and my rights, if I agree to participate in it. I will read this form carefully and, if I agree to be interviewed, I will sign this form.

Purpose

I understand that Ms. Sruthi Suresh, proposes to study the 'Effect of Art on Individuals undergoing Physiotherapy'

Duration and location of study

If I agree to undergo the interview, it will take place at my center along with my colleagues and will take about 60 minutes.

Procedure

If I agree to be interviewed, it will be along with my colleagues, by answering four questionnaires. I understand that my name will not be disclosed in any of the report written about this research.

Right to refuse and to withdraw

I understand that participation in this research is voluntary. I may agree for an interview or I may decline an interview. If I disagree for an interview, I may refuse to answer any question and I may end the interview at any time.

Offer to answer any question

If I have any questions about the study, I may call the researcher: Ms. Sruthi Suresh (09487374163), and if I have any question about my rights as a participant, I may call the research guide Dr. N.S. Rohini (09443044218)

Confidentiality Statement

As a client, all information you share about yourself will be kept strictly confidential.

I agree to participate in this research.

Name_____ Date_____

Researcher's statement: I have explained the nature and purpose of this research. I agree to answer any question regarding the rights of the participant.

Name_____ Date _____

Appendix B

Personal Profile Sheet

NAME :

AGE :

GENDER : MALE/FEMALE

MARITAL STATUS : UNMARRIED/MARRIED

TYPE OF FAMILY : NUCLEAR/JOINT

TYPE OF INJURY :

DURATION OF STAY :

NAME OF THE CENTRE :

Appendix C

Domain Specific Hope Scale

Instructions: Please take a moment to contemplate each of the following life areas before you answer the questions in each section. Using the scale below, select the number that best describes your response to each question.

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Definitely False	*Mostly False*	*Somewhat False*	*Slightly False*	*Slightly True*	*Somewhat True*	*Mostly True*	*Definitely True*

Please take a moment to contemplate your social life. Think about your friendships and acquaintances and how you interact with others. Once you have this in mind, answer the following questions using the scale above.

Social Relationships (Friendships, casual acquaintance)

_____ 1. I can think of many ways to make friends.
_____ 2. I actively pursue friendships.
_____ 3. There are lots of ways to meet new people.
_____ 4. I can think of many ways to be included in the groups that are important to me.
_____ 5. I've been pretty successful where friendships are concerned.
_____ 6. Even when someone seems unapproachable, I know I can find a way to break the ice.
_____ 7. My past social experiences have prepared me to make friends in the future.
_____ 8. When I meet someone I want to be friends with, I usually succeed.

Please take a moment to contemplate your family life. Think about your family members. Once you have this in mind, answer the following questions using the scale above.

Family Life

_____ 1. I can think of lots of things I enjoy doing with my family.

_____ 2. I energetically work on maintaining family relationships.

_____ 3. I can think of many ways to include my family in things that are important to me.

_____ 4. If you can read this, place an X on the line.

_____ 5. I have a pretty successful family life.

_____ 6. Even when we disagree, I know my family can find a way to solve our problems.

_____ 7. I have the kind of relationships that I want with family members.

_____ 8. There are lots of ways to communicate my feelings to family members.

_____ 9. My experiences with my family have prepared me for a family of my own.

Please take a moment to contemplate your leisure time. Think about the activities that you enjoy that you enjoy doing in your spare time. For some this may be sports or music or art. Once you have this in mind, answer the following questions using the scale above.

Leisure Activities

_____ 1. I can think of many satisfying things that to do in my spare time.

_____ 2. I energetically pursue my leisure time activities.

_____ 3. If my planned leisure time activities fall through, I can find something else that I enjoy.

_____ 4. I can think of lots of ways to make time for the activities that are important to me.

_____ 5. Even if others don't think my activities are important, I still enjoy doing them.

_____ 6. My experiences with hobbies and other leisure time activities are important to my future.

_____ 7. I have satisfying activities that I do in my leisure time.

_____ 8. When I try to perform well in leisure time activities, I usually succeed.

Appendix D

Psychological Inflexibility in Pain Scale (PIPS)

Instructions: Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it.

1	2	3	4	5	6	7
Never true	Very rarely true	Seldom true	Sometimes true	Often true	Almost always true	Always true

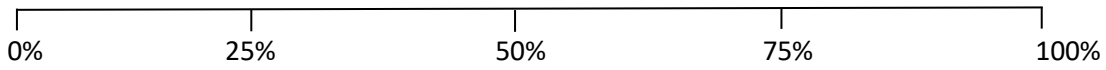
1. I would do almost anything to get rid of my pain.	1 2 3 4 5 6 7
2. I don't do things that are important to me to avoid feeling my pain.	1 2 3 4 5 6 7
3. When I am in pain, I stay away from other people.	1 2 3 4 5 6 7
4. It is important that I learn to control my pain.	1 2 3 4 5 6 7
5. It is important to understand what causes my pain.	1 2 3 4 5 6 7
6. I feel angry about my pain.	1 2 3 4 5 6 7
7. I say things like "I don't have any energy", "I am not well enough", "I don't have time", "I don't dare", "I have too much pain", "I feel too bad" or "I don't feel like it".	1 2 3 4 5 6 7
8. I avoid doing things when there is a risk it will hurt or make things worse.	1 2 3 4 5 6 7
9. I avoid scheduling activities because of my pain.	1 2 3 4 5 6 7
10. I put a lot of effort into fighting my pain.	1 2 3 4 5 6 7
11. It's not me that controls my life, it's my pain.	1 2 3 4 5 6 7
12. I need to understand what is wrong in order to move on.	1 2 3 4 5 6 7
13. Because of my pain, I no longer plan for the future.	1 2 3 4 5 6 7
14. I postpone things on account of my pain.	1 2 3 4 5 6 7
15. I cancel planned activities when I am in pain.	1 2 3 4 5 6 7
16. I interrupt activities if it starts to hurt or becomes worse.	1 2 3 4 5 6 7

Appendix E

Visual Analogue Feedback Scale

The Visual Analogue Feedback Scale is a simple and easy method of collecting your feedback on a scale of 1 to 100. The researcher has used this scale as a means to understand your overall level of mental health as a result of this intervention. It is to gain a comprehensive understanding whether you, as a participant in this study enjoyed being a part of this study and attending the sessions conducted. The research would also appreciate any feedback or suggestions with regard to your experience during these sessions.

Rate how you felt before (B) and after (A) the sessions on the scale given below-



INSTITUTIONAL HUMAN ETHICS COMMITTEE

Avinashilingam
Institute for Home Science and Higher Education for Women
University
(Estd. u/s 3 of UGC Act 1956)

19th March 2018

To
Ms. Sruthi Suresh
Department of Psychology
Avinashilingam Institute for Home Science and
Higher Education for Women
Coimbatore – 641 043

Dear Sruthi Suresh,

Ref: Your proposal No. IHEC/17-18/PSY/07 entitled "Effect of Art on Individuals undergoing Physiotherapy" submitted for approval of the IHEC on 14th December.

The Institutional Human Ethics Committee of our University hereby grants approval to your research proposal No. IHEC/17-18/PSY/07 "Effect of Art on Individuals undergoing Physiotherapy" submitted by you. The Approval number for the same is AUW/ IHEC/ PSY - 17-18/XPD/07.

We wish you all the best in your research endeavours.

Regards,

S. Uma Mageshwari
Dr.S.Uma Mageshwari
Member Secretary

Avinashilingam Institute For Home Science And Higher Education For Women
CBE - 43