IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

THE COMFORTING AND CALMING EFFECT OF DEEP TOUCH PRESSURE THERAPY IN CHILDREN WITH AUTISM

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Abstract: Autism is a neurodevelopmental condition marked by qualitative impairments in social interaction and communication and a confined repetitive and stereotyped behavior pattern. There is a varying degree of impairments, with a wide range of symptoms including difficulty in communication and social skills, repetitive behaviors, and deficits in sensory perception; hence, it is identified as Autism Spectrum Disorder (ASD). The outcome of this results in anxiety and eventually meltdown and tantrums in Children with ASD. Deep Touch Pressure (DTP) Therapy is frequently used as an intervention for Autism. Weighted vests, compression vests, pneumatic pressure garments, and wrap-weighted blankets are often used by occupational therapists worldwide for children with Autism to create deep touch pressure. Furthermore, several studies have demonstrated DTP's effectiveness.

Keywords: Autism, Anxiety, Comfort, Calming, Clothing, Children, Deep touch pressure

I. INTRODUCTION

Deep touch pressure (DTP) is generally defined as tactile sensory input, facilitated through physical activities such as holding, stroking, hugging, compression, wrapping, and squeezing. The therapies associated with DTP intervention are known to regulate the physical and mental status of the individuals (Zissermann, 1992). Research has revealed that DTP therapies and interventions have helped people affected by high stress, arousal, anxiety, and restlessness. It has shown positive outcomes in individuals with autism spectrum disorder, attention deficits, developmental disability, and persons with special needs (Edelson, Edelson, Kerr, & Grandin, 1998).

Oversensitivity to touch and other senses are a common symptom of autism condition. They react to sensory inputs in various ways, with frequent symptoms including hypersensitivity to unexpected or light touch, any abrupt movement, excessive noise or visual stimuli, and particular types of scent or smell. Children with Autism have tactile issues and also experiences issues of tactile defensiveness, which eventually leads to anxiety, meltdown, and behavioral problems in children with Autism. Tactile defensiveness refers to an adverse reaction to specific tactile stimuli (Royeen et al. 1989). Individuals with tactile defensiveness may be subjected to a lot of sensory input and have a hard time going about their regular life.

Using DTP as a medical intervention was reported to decrease over-arousal in individuals who have learning disabilities and other clinical groups. Deep touch pressure that features firm holding, wrapping or compression massaging is unlike the light touch, which often comprises stimulation of tickling and sometimes pain in the individuals of ASD. The latter triggers evoking of the sympathetic nervous system leading to greater heartbeat rate and respiration. By comparison, the deep touch pressure exerts a relaxing impact, calming abilities and lowers heartbeat rate and respiration (Vandenberg, 2001). Previous research has shown the applicability and the effectiveness of DTP with individuals with ASD; however, there are not many clinical or experimental trials of its efficacy.

II. HOW DEEP TOUCH PRESSURE WORKS

Deep touch pressure increases the activation of the touch sensory system to produce and promote a sense of wellbeing in the body by applying firm yet gentle pressure.

The autonomic nervous system is in charge of receiving information from the body and surroundings and sending signals out in reaction to that information to regulate the operations of many of the body's organs. The autonomic nervous system has two main divisions, Sympathetic and Parasympathetic (Low, P,2021). When deep pressure is applied to the body, the sympathetic nervous system is turned off, and the parasympathetic nervous system is activated. It is referred to as the transition from the “fight or flight” to “rest and digest” mode.

The sympathetic nervous system (SNS) servers as the body’s “alarm” mechanism. It is prevalent when a person is dealing with a stressful scenario for instance dealing with workplace stress or any other day to day situation of stress such as driving through the rush hour traffic etc. If the SNS takes control for too long, the person starts to feel worried, fatigued, on edge, and angry. As a result, sleeping issues and disruption in the digestive system are commonly seen. Regrettably, it has been noticed that children with autism spectrum disorders and sensory processing difficulties spend a lot of time with their sympathetic nervous system at an “on mode." Even when they finally settle and calm down, it only takes a few seconds for this system to reactivate. (www.appliedbehavioranalysisedu.org,2021).

The parasympathetic nervous system (PSNS), on the other hand, promotes mental and physical relaxation. The heart rate slows, muscles relax, and blood circulation improves as the parasympathetic nervous system takes control. (Low, P,2021). Endorphins, or "happy" hormones, are produced by your body and make you feel great. The parasympathetic nervous system is activated when Deep touch pressure (DTP) is administered to the body, calming and relaxing the children with Autism. Dopamine and serotonin, the brain's feel-good chemicals, are released in unison with this shift. Motivation, focus, attention, memory, healthy and positive social behaviour, sleep, impulse control, digestion is all aided and improved by these hormones (www.appliedbehavioranalysisedu.org,2021).
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III. THE COMFORTING AND CALMING EFFECT OF DEEP TOUCH PRESSURE

DTP has been widely practiced by occupational therapists (OT) dealing with children with autism spectrum disorders (ASD). It has become more successful by lowering signs or indicators of anxiety, panic, and stress and better control of behavior, improving focus in their day-to-day activities, and gaining progress at school. DPT is viewed as an essential and effective practice since it is non-invasive, can be applied effortlessly, and has no known unfavourable symptoms.
In their study, Case-Smith, Weaver, & Fristad (2015) highlighted the difference between sensory integration techniques known to arouse the child's adaptive responses and sensory-based interventions (SBI), which are applied to the child to improve behaviors related with sensory modulation disorders. DTP is categorized under SBI since caregivers commonly handle the application.

Deep touch pressure, popularly termed as "squeeze machine" was designed by Temple Grandin, a globally popular and decorated researcher. Temple is autistic herself and designed this system to apply flat and locally controlled weight upon the entire individual. The pressure is achieved by pressing the individual between a couple of foam cushioned machine. Medical beliefs and some evaluations suggest that the deep touch pressure was instrumental in helping the user learn how to deal with tactile /touch-related issues and reduce uneasiness and anxiety. It also causes a reduction in tension (Gradin, T.1992). Through this, Temple increased her perseverance to touch, which also significantly influenced her individual satisfaction.

According to Edelson S.M, et al. (1998), employing deep touch pressure is proposed to yield desirable results and bear significant calming abilities in mood for people with increased levels of arousal and anxiety. Edelson also suggests that it is helpful for when it comes to structuring the central nervous system. This, as proposed by Vanden Berg (2001), also causes improved behavior management in autistic minors. The research of Chen, H.Y, Yang, H., & Chi, H.-J. (2012) adds to the evidence supporting DTP's beneficial therapeutic effects in lowering anxiety in a dental environment.

Research suggests that psychological wellness could be strongly influenced with the sensation of touch. In this regard, the Wilbarger Protocol and the deep touch pressure stand crucial for tactile solution interventions. The Wilbarger Protocol uses brushing, joint pressure, and weight as the three kinds of touch targeted as crucial aspects of tactile coordination treatment. Therapists employ their skills to put in significant weight to individual body parts, all of which are followed by the use of a delicate brush to the skin, followed by a significant weight such as a blanket. This kind of treatment is applied every two hours for a few minutes for a specified duration. Research suggests that these kinds of touch treatment are useful for this condition and, for instance, in dementia, nervousness, anxiety disorders, and depression (Cati Vaucelle ,et.al 2009).

Bestbier & Williams (2017) found that deep pressure has a considerable positive effect on most children with varying individual responses. According to the findings, deep pressure therapy should be developed and administered in a specific manner based on the needs of the individual, according to the findings.Many researchers have indicated the usefulness of deep touch pressure in the wellbeing of individuals with ASD, thereby rendering help to process the sensory input. Several products have been developed based on the DTP therapy, most of them are wearable and include products such as weighted vests and blankets, inflated vests, and tight fitted compression garments.

User-friendly compression therapy, wearable product -a reactive undershirt with embedded textile-based pneumatic actuators that deliver tactile stimulation in response to changes in an emotional state to reduce anxiety , was developed by Goncu-Berk, G., Halsted, T., Zhang, R., & Pan, T. (2020). Smart clothing “CalmWear” uses tactile actuation via a textured air bladder that offers

automated and dynamic compression in response to changes in as soon as there is a sign of anxiety i.e change in heart rate variability and respiration rate (Goncu-Berk, G., Zhang, R., & Yilmaz, C. ,2021). In a study by Guinchat, V et.al (2020) , Compression garments appear to be a promising adjuvant treatment for individuals with Autism and SPD who have behavioral and postural issues.

Many patients have benefitted from using weighted blankets as a deep touch pressure (DTP) method to help them relax. Cancer patients can experience anxiety as a result of their diagnosis and treatment, such as chemotherapy infusions. The use of weighted blankets as a DTP tool to reduce anxiety in chemotherapy patients was studied. The study has found that weighted blankets lowered anxiety in individuals receiving chemotherapy (Vinson, J., Powers, J., & Mosesso, K.,2020).

Despite the fact that a large number of researches have been conducted to examine the inferences of DTP approaches, the theoretical understanding that could drive DTP interventions are limited, and data has produced varied results (Losinski, Cook, Hirsch, & Sanders, 2017). DTP has been used for many years, there exists little evidence that could suggest its use with individuals with ASD as an intervention to challenging behaviour. However, in the recent era there are emerging devices with DPT that has been highly effective in the wellbeing of individuals (McGinnis, Blakely, Harvey, Hodges, & Rickards, 2013).

IV. CONCLUSION

Deep touch pressure therapy has been helpful in acting as a relaxing tool that increases the activity in the parasympathetic division of the autonomic nervous system for patients suffering from high levels of stress and arousal. The use of Deep Touch Pressure in the treatment of Autism Spectrum Disorder has been in practice for many years. Though, empirical and theoretical evidence relating to Deep touch pressure's clinical effects are limited. Several wearable devices based on DTP therapy have been developed, including weighted vests and blankets, inflated vests, and compression clothes.

On the other hand, recent breakthroughs have discovered Deep touch pressure therapy's potential for improving children's wellbeing. Many children with Autism can learn and flourish with the proper treatment and training. Early intervention can reduce the challenges associated with Autism, improve behavior management, reduce anxiety, and offer them a sense of independence for the performance of daily routine activities.

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