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## EFFICACY OF INTERVENTIONS USED BY OCCUPATIONAL THERAPIST FOR CHILDREN WITH SENSORY PROCESSING DISORDER (SPD)

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**ABSTRACT:** *Aim: The aim of the study was to find out the efficacy of Intervention used by Occupational Therapist for children with Sensory Processing Disorder (SPD). Objectives: (i) To find out the children with Sensory Processing Disorder (SPD) (ii) To give Occupational Therapy management for children with Sensory Processing Disorder (SPD). Methods: Ten children with Sensory Processing Disorder (SPD) for both male and female children were selected for this study. All the children were screened by Short Sensory Profile (SSP) and Gross Motor Functional Measure scale (GMFMs) were used for the objective measurement of children physical (gross motor, fine motor), social, sensory, behavioral and education skill. The pre and post therapy values were statistically analyzed on the effect of Occupational Therapy intervention for children with Sensory Processing Disorder (SPD). Result: The statistical analysis of Short Sensory Profile (SSP), pre-treatment Mean value is 20.3, SD 7.0718 and post-treatment Mean value is 28.6, S.D 6.9474, t-test value of (SSP) is 9.147244 and P value is < .00001. The Statistical analysis of Gross Motor Functional Measure scale GMFMs pre-treatment Mean value is 77.9, S.D is 3.7802 and post-treatment Mean value is 108.0, S.D 7.91201, t-test value of GMFMs is -10.298 and P value is < .00001. This statistical analysis shows that, there is significant difference between pre and post-therapy values of both SSP and GMFM score. Hence, it is suggested that, the gross motor, fine motor and educational skills as well as social, sensory, behavioral skills were changed for children with Sensory Processing Disorder (SPD). As an occupational therapist would like to suggest, Innovation in School, colleges' especially higher educational institutes must take special care for these (SPD) students, Young learners with SPD will be able to negotiate the challenges of entering school, higher education and adjusting its demands, Low- and high-tech innovations depending on the nature of the need of the SPD personnel should be arranged. Conclusion: Occupational Therapy can be used effectively as one of the interventions to improve gross motor, fine motor and educational skills as well as to change their social, sensory and behavioral skills for children with Sensory Processing Disorder. Hence; it is recommended that, the Occupational Therapy play a pivotal role in treating children with Sensory Processing Disorder (SPD).*

**KEYWORDS:** Occupational Therapy, Sensory Processing Disorder (SPD), Short Sensory Profile (SSP), Gross Motor Functional Measure Scale (GMFMs)

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## INTRODUCTION

Sensory Processing Disorder (SPD) is a complex developmental disorder affecting children and adults. That exists when sensory signals do not get organized into appropriate responses. Sensory Processing Disorder (SPD) (formerly known as (SID) "Sensory Integration

Dysfunction”) People with SPD find it difficult to process sensory information (e.g. sound, touch and movement) from the world around them. This means that they may feel sensory input more or less intensely than other people. SPD can therefore impact on a person’s ability to interact in different environments and perform daily activities.

There are 3 possible components of dysfunction of **Sensory Integration**:

- **Sensory Modulation Disorder** is a problem with turning sensory messages into controlled behaviours that match the nature and intensity of the sensory information.
- **Sensory-Based Motor Disorder** is a problem with stabilizing, moving or planning a series of movements in response to sensory demands.
- **Sensory Discrimination Disorder** is a problem with sensing similarities and differences between sensations.

People with Sensory Modulation difficulties experience their world as Hypersensitive (over reactive, sensory avoidance), Hyposensitive (under reactive, sensory seeker) and in some cases a mix of both.

They may also present with motor skill problems (Sensory Processing difficulties). They may react with strong emotional behaviors and experience what may be described as ‘melt downs’. In simpler terms, the brain and nervous system must act as a ‘Filter’ – Filtering in and filtering out sensory input from the environment to achieve the optimal level of arousal in order to attend to the task at hand or simply remain in a state of equilibrium.

The brain and nervous system receive input from body parts as well as from the outside world. The central nervous system is also a means of transmitting messages throughout the body and functions somewhat like a computer system. The messages that are transmitted, however, affect functions such as muscle movement, coordination, learning, memory, emotion, behavior and thought. As with a computer, a breakdown or malfunction in one part of the system often affects other functions of the system.

Sensations from hearing, vision, taste, smell, touch, pressure, and movement provide the input to the brain which is organized for movement, cognition and learning. The richness of the sensory environment and the interactive experience of the individual with the environment contribute to optimal development of function.

The brain does not process or organize the flow of sensory impulses in a way that gives the child precise information about themselves and their world.

Short Sensory Profile (SSP) and Gross Motor Functional Measure scale (GMFMs) as a Standardized screening tool to assess gross motor function and to find out the efficacy of Intervention used by Occupational Therapist for children with Sensory Processing Disorder (SPD). Occupational Therapy helps organizing sensory systems and increase body awareness as well as to promote or improve physical and functional outcomes for children with Sensory Processing Disorder.

Therefore, in this study, evaluations done on the effectiveness of Occupational Therapy Intervention used by Occupational Therapist for children with Sensory Processing Disorder

## METHODOLOGY

**Participants:** Participants of this study were a convenience sample of children diagnosed with Sensory Processing Disorder (SPD). All children were between ages 8-12 [Mean] ages (10.5) and attended 8 weeks Occupational Therapy program. Total of 10 patients included, 5 Male Children and 5 Female Children diagnosed with Sensory Processing Disorder (SPD) were participated in this study. All children attended Occupational Therapy intervention program.

### Measures: Assessment Tool

Gross Motor Functional Measure scale (GMFMs):

The **Gross Motor Functional Measure scale** was developed by the Dianne J. Russell, Peter L. Rosenbaum, Lisa M. Avery, and Mary Lane. It is a Standardized observational test and the purpose of the GMFM is to evaluate change in motor function over time or with intervention for children with Autism Spectrum Disorder. There is a 4-point scoring system for each item on the GMFM.

**Short Sensory Profile (SSP):** The Short Sensory Profile is a 38-item caregiver questionnaire which was completed by parent. Score sheet designed for use in screening and research protocols. The items on the Sensory Profile are grouped into three major sections, sensory processing, modulation, and behavioral and emotional responses. Children who exhibit difficulties in any of the areas are very likely to have sensory processing issues that affect performance and should have further assessment of sensory processing by an occupational therapist.

**Procedure:** The participants were randomly assigned for occupational therapy program, pre and posttest were done in front of parents / care givers. Standardized assessment tool which include Short Sensory Profile (SSP) scores and (GMFMs) to assess Gross Motor function for children with Sensory Processing Disorder and intervention were provided for the duration of 8 weeks training program with appropriate occupational therapy management such as peg-board activities, dexterity, puzzles, ball play, balancing / vestibular and sensory integration training for children with Sensory Processing Disorder. The entire children received intervention of 45 min each over an 8-week period, for Occupational Therapy intervention.

**Criteria for selection:** Children with Sensory Processing Disorder for both male and female were selected for this study.

### Statistical Analysis

SPSS Software was used for statistical analyses. Significance was inferred for  $P < .00001$  in all analyses. The t-test and P value were used to analyze the Short Sensory Profile (SSP) and GMFMs score for Children with Sensory Processing Disorder (SPD)

### Need for The Study

To create awareness among parents of children with SPD and Medical as well as other Health Care Professional

**RESULT**

The statistical analysis of Short Sensory Profile (SSP) pre-treatment mean value is 20.3, SD 7.0718 and post-treatment mean value is 28.6, S.D 6.9474, t-test value of SSP is 9.40233 and P value is  $< .00001$ . The Statistical analysis of Gross Motor Functional Measure scale (GMFMs) pre-treatment mean value is 77.9, S.D is 3.7802 and post-treatment mean value is 108.0, S.D 7.91201, t-test value of GMFMs is -10.298 and P value is  $< .00001$ .

**TABLE: 1**

This Table Shows Mean and SD value of Pre and Post-therapy scores of SSP for children with Sensory Processing Disorder (SPD)

	Mean value	SD
<b>Pre -Therapy Value</b>	<b>20.3</b>	<b>7.0718</b>
<b>Post-Therapy Value</b>	<b>28.6</b>	<b>6.9474</b>

**TABLE: 2**

This Table Shows T and P value of Pre and Post-therapy scores of SSP for Children Sensory Processing Disorder (SPD)

t-value	p-value
<b>9.147244</b>	<b><math>&lt; .00001</math></b>

**TABLE: 3**

This Table Shows Mean and SD of Pre and Post-therapy Management of Gross Motor Functional Measure scale (GMFMs) for Children with Sensory Processing Disorder (SPD)

	Mean value	SD
<b>Pre -Therapy Value</b>	<b>77.9</b>	3.7802
<b>Post-Therapy Value</b>	<b>108.0</b>	<b>7.91201</b>

**TABLE: 4**

This table shows T and P value of Pre and Post-therapy Management of GMFM score for Children with Sensory Processing Disorder (SPD).

<b>t-value</b>	<b>p-value</b>
<b>-10.298</b>	<b>&lt; .00001.</b>

This statistical analysis shows that, there is significant difference between pre and post-therapy values of both SSP and GMFM score. Hence, it is suggested that, the gross motor, fine motor and educational skills as well as social, sensory, behavioral skills were changed for children with Sensory Processing Disorder (SPD).

It is observed that, the t value is grater then the table values hence, the null hypothesis is rejected. It implies that there is significant difference in the mean values prior to and after treatment. Hence, it is concluded that, the treatment significantly shows improvements in children with Sensory Processing Disorder (SPD).

**CONCLUSION**

Through this study, it is concluded that, the Occupational Therapy intervention can be used effectively as one of the treatments to improve gross motor, fine motor and educational skills as well as to change their social, sensory and behavioral skills for children with Sensory Processing Disorder. Hence, it is recommended that, the Occupational Therapy play a major role in treating children with Sensory Processing Disorder (SPD).

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**Conflict of Interest**

I declared no potential conflict of interest with respect to the research.

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**APPENDIX****TABLE: 1:**

This Table shows, name of the participants' (Children) gender with age group

SI No	Name of the children	Age	Gender
1	K. J	11	FC
2	R. J	10	FC
3	N.R	10	MC
4	T.K	9	FC
5	V.G	8.5	FC
6	K.D	11	MC
7	S.R	10	MC
8	K. S	9.5	MC
9	S. A	10	FC
10	T. N	11.5	MC
<b>MEAN VALUE 10.05</b>			

**TABLE: 2:**

This Table shows, Pre and Post-therapy value of Short Sensory Profile (SSP) for children with Sensory Processing Disorder (SPD).

SI No	Name of the Participant / Initial	Pre-Therapy Value	Post-Therapy Value
		Mean Raw score	Mean Raw score
1	K.J	24	28
2	R.J	12	23
3	N.R	14	19
4	T.K	28	35
5	V.G	16	28
6	K.D	11	22
7	S.R	22	31
8	K.S	19	26
9	S.A	25	31
10	T.N	32	43
<b>MEAN VALUE</b>		<b>20.3</b>	<b>28.6</b>

The t-value is 9.147244. The p-value is < 0.00001. The result is significant at  $p < 0.01$

**TABLE: 3:**

This Table shows, Pre and Post-therapy value of Gross Motor Functional Measure scale GMFMs for children with Sensory Processing Disorder (SPD)

<b>Sl No</b>	<b>Name of the Participant / Initial</b>	<b>Pre-Therapy Value</b>	<b>Post Therapy Value</b>
1	K.J	74	107
2	R.J	79	99
3	N.R	78	103
4	T.K	79	94
5	V.G	77	111
6	K.D	82	121
7	S.R	70	104
8	K.S	84	118
9	S.A	76	110
10	T.N	80	113
<b>MEAN VALUE</b>		<b>77.9</b>	<b>108.0</b>

The t-value is -10.298. The p-value is < .00001. The result is significant at  $p < .05$ .