



## **AOTA Critically Appraised Papers Series**

# **Evidence Exchange**

*\*A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

### **CRITICALLY APPRAISED PAPER (CAP)**

Sahoo, S. K., & Senapati, A. (2014). Effect of sensory diet through outdoor play on functional behaviour in children with ADHD. *Indian Journal of Occupational Therapy*, 46(2), 49–54.

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#### **FOCUSED QUESTION**

For preschool and elementary school children (kindergarten through fifth grade), are functional health impairments more prevalent as a result of less time for play with the current rigorous academic structure used in schools?

#### **CLINICAL BOTTOM LINE**

Children with attention-deficit/hyperactivity disorder (ADHD) are characterized by inattention, hyperactivity, and impulsive behavior. These characteristics affect children's functional behavior and make it difficult for them to engage in activities of daily living. Current interventions for children with ADHD seem to be limited; most therapists rely on sensory integration techniques.

This study examined the effectiveness of an intervention combining sensory techniques with outdoor play activities on the child's functional behavior. After children were provided with this intervention, results showed that their functional behavior was significantly improved in multiple areas.

Occupational therapists can take this information and begin to use the combination of play and a sensory diet as an intervention method when working with children with ADHD. This study lets practitioners know there are other intervention methods available rather than strictly sensory integration techniques.

#### **RESEARCH OBJECTIVE(S)**

- Investigate the possibility of a positive correlation between the effect of sensory diet combined with outdoor play and the functional behavior of children with ADHD
- Support that outdoor play in combination with a sensory diet is a more effective intervention for these children than a sensory diet alone

#### **DESIGN TYPE AND LEVEL OF EVIDENCE:**

Level I : Randomized pretest–posttest experimental design

## **PARTICIPANT SELECTION**

All 28 students with ADHD were randomly selected to complete this study. The participants were selected from the pediatric section of the Swami Vivekananda National Institute for Rehabilitation Training and Research (SVNIRTAR) over a period of 6 months.

## **INCLUSION CRITERIA**

To be considered for this study, participants had to be between the ages of 6 and 12 years and be diagnosed with ADHD.

## **EXCLUSION CRITERIA**

Participants who exhibited mental retardation, epilepsy, visual or hearing impairments, or other congenital developmental disorders were excluded from this study.

## **PARTICIPANT CHARACTERISTICS**

N= (Number of participants taking part in the study)

28

#/ (%) Male

NR

#/ (%) Female

NR

Ethnicity

Indian

Disease/disability diagnosis

ADHD

## **INTERVENTION(S) AND CONTROL GROUPS**

Group 1: Experimental group

Brief description of the intervention	Children in this group were provided with a sensory diet as well as outdoor play activities (e.g., paw prints, tactile road, mummy wrap, "London Bridge Is Falling Down," peanut hunting in the grass).
How many participants in the group?	14
Where did the intervention take place?	SVNIRTAR
Who delivered?	Occupational therapist
How often?	During morning sessions
For how long?	2 months

Group 2: Control group

Brief description of the intervention	Children in this group received a sensory diet alone, no outdoor play.
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How many participants in the group?	14
YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NR <input type="checkbox"/>	<i>Comment:</i> The study simply stated that the intervention was provided by occupational therapists; it did not report how many were involved in the study or assigned to which group.
Where did the intervention take place?	SVNIRTAR
Who delivered?	Occupational therapist
How often?	During morning sessions
For how long?	2 months

Intervention Biases:

Contamination:

YES <input type="checkbox"/> NO <input type="checkbox"/> NR <input checked="" type="checkbox"/>	<i>Comment:</i>
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Co-intervention:

YES <input type="checkbox"/> NO <input type="checkbox"/> NR <input checked="" type="checkbox"/>	<i>Comment:</i> Although all of the children had to be diagnosed with ADHD to participate in this study, it was not reported whether the students were taking medication. If any of the children were taking medication, that could have influenced the results of the intervention provided.
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Timing:

YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> NR <input type="checkbox"/>	<i>Comment:</i> The children only received the intervention for 2 months; therefore, there might not have been sufficient time for a noticeable effect in the outcomes of interest. This favors the control group.
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Site:

Use of different therapists to provide intervention:

YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NR <input type="checkbox"/>	<i>Comment:</i> The site of the intervention was consistent between the experimental and control groups.
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## MEASURES AND OUTCOMES

Complete for each measure relevant to occupational therapy:

Measure 1: Weiss Functional Impairment Rating Scale

Name/type of measure used:	Weiss Functional Impairment Rating Scale
What outcome was measured?	Children's functional behaviors
Is the measure reliable?	YES <input type="checkbox"/> NO <input type="checkbox"/> NR <input checked="" type="checkbox"/>
Is the measure valid?	YES <input type="checkbox"/> NO <input type="checkbox"/> NR <input checked="" type="checkbox"/>
When is the measure used?	Before and after the delivery of the intervention

### Measurement Biases

Recall or memory bias.

YES <input type="checkbox"/> NO <input type="checkbox"/> NR <input checked="" type="checkbox"/>	<i>Comment:</i> The study did not report whether there was recall or memory bias; however, the Short Sensory Profile relies on the reports of the informant to provide sensory information about the child.
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Were the evaluators blind to treatment status?

Others (list and explain):

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## RESULTS

List key findings based on study objectives:

YES <input type="checkbox"/> NO <input type="checkbox"/> NR <input checked="" type="checkbox"/>	<i>Comment:</i>
This study found that children who received a sensory diet combined with outdoor play exhibited greater improvement in functional behavior than those who received strictly sensory integration techniques ( $p < .01$ , which supports the significance of the results).	

Was this study adequately powered (large enough to show a difference)?

YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> NR <input type="checkbox"/>	<i>Comment:</i> The study consisted of a relatively small sample size of 28 students with ADHD. Although significant results were reported, the small sample size restricts generalizability.
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Were appropriate analytic methods used?

YES <input checked="" type="checkbox"/>	<i>Comment:</i>
NO <input type="checkbox"/>	
NR <input type="checkbox"/>	

Were statistics appropriately reported (in written or table format)?

YES <input checked="" type="checkbox"/>	<i>Comment:</i>
NO <input type="checkbox"/>	
NR <input type="checkbox"/>	

Was the percent/number of subjects/participants who dropped out of the study reported?

YES <input checked="" type="checkbox"/>
NO <input type="checkbox"/>

Limitations:

What are the overall study limitations?

This study used a relatively small sample size, which makes it difficult to generalize. Furthermore, the population used during this study was strictly children with ADHD. A final limitation to this study was the relatively short duration, which did not allow adequate time to establish the long-term effectiveness of the intervention.
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## CONCLUSIONS

State the authors' conclusions related to the research objectives.

The authors concluded that the combination of outdoor play with a sensory diet was helpful for children with ADHD in improving their functional behavior. They came to this conclusion on the basis of the fact that the experimental group (who received the outdoor play intervention) showed more improvements in their functional behavior in school, family, life skills, self-concept, social activities, and quality of life. However, more research needs to be completed to examine the long-lasting beneficial effects of this treatment.
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This work is based on the evidence-based literature review completed by Emily Lyman and Carmela Battaglia, faculty advisor, Keuka College.

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