

Applying concept of Snoezelen multisensory in the developmental stimulation program for parents and caregivers of preschool autistic children

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Abstract

This study is aimed to develop and to evaluate the validity of the developmental stimulation program by applying the multisensory approach for parents and caregivers of preschool autistic children. This study consisted of two phases. The first phase explored perspectives for design program and analyzed the content validity by examining the index of item objective congruence (IOC). The second phase was a focus group discussion with eight caregivers of preschool autistic children regarding the opinions after implementation. The developmental stimulation program was developed basing on the therapeutic use-of-self approach, daily living activities, play environment and development stimulation, related knowledge and strategies in family's context, and sharing between families. The program components consisted of three activities for caregivers such as meeting and understanding the nature of individual child, learning of child's surroundings, and designing of an individual new lifestyle. Validity of the program was acceptable (IOC = 0.6-1.0). After implementing the program in eight families, the result showed four crucial points. First, caregivers were able to understand the natural behavior of the children. Second, the caregivers could improve their child development. Third, there were strengths and limitations of the pilot program. Finally, the way of improving program effectiveness was found out. A model of developmental stimulation by applying the concept of Snoezelen technique for caregivers of preschool autistic children can increase understanding of natural individual child by caregivers. This understanding led to child development progression, adjust surroundings or occupational performances with autistic children, and encourage the empowerment of caregiver needs by supporting system and continuity of services. Further study might consider the cost-effectiveness and efficiency of the program for parents and caregivers of preschool autistic children before implementing in the real situation.

Introduction

Background and Rationale of the Study

Autistic children are children who have developmental disability. They have impairments in social communication and social interaction, restrictive and repetitive behaviors, interests, and activities due to abnormalities in the central nervous system. In Thailand, the prevalence of autism between the ages of 1-4 years was at 48.19 per 10,000 people. (Ong-atsakunman, Mueansunthorn & Chammak, 2015). Therefore, the medical community has been studying about the autism continuously. Since autistic children have many abnormalities in social and environmental interaction from low to high level (Khwunkeeree, 1998), they need close care and a long period of care. Caregivers of autistic children must be very patient (Werner, 2004). Family is subsequently important in caring for children with autism because the family is an important component of society. The family also has a duty to produce quality members for society. If the family is happy, the members who are the products of the family will also have a good quality. Promoting, preventing, treating, and rehabilitating the health of each family in the community at all levels are important to help strengthen community (Duvall, 1971). Parents of autistic children are a group of people who have different social contexts and live in different environments. The needs of autistic children are different when compared with typical children, especially their behaviors. Parents of autistic children consequently have characteristics, lifestyle, and activities that are worth studying in terms of basic interests, activities, location, participating person, the level of fun and satisfaction (Siphetcharawut, 2007). In occupational therapy, there is the concept that having a special child in the family is not an obstacle in the performance of duties for parents of autistic children. Activities such as providing psychosocial and cultural supports can help children to have an optimal experience of health and belonging to the larger community (Jaffe et al., 2010). Sensory integration disorders are abnormalities found in various diseases and most common in Autism Spectrum Disorder (ASD). This abnormality was discovered 50 years ago by Dr. A. Jean Ayres.

Later (2007) defined the terminology to distinguish problems in the sensory process for use in communicating with other medical professions for a clearer understanding and visualization of the problem by specifying the problem from the sensory based processing (sensory based processing). This is useful for research and designing specific treatment methods regarding categorizing sensory processing impairments into 3 different patterns, including: 1) Sensory Modulation Disorder (SMD), consists of Sensory Over Responsive (SOR), Sensory Under Responsive (SUR) and Sensory seeking / Craving (SS) 2) Sensory Discriminative Disorder (SDD) and 3) Sensory Based Motor Disorder (SBMD), consists of postural disorder and dyspraxia.

By providing suitable environment for child's sensory processing patterns helps to satisfy the child's neurological needs and reduce stress and abnormal social behaviors in each child. Therefore, the main principle of using Snoezelen or Multi-sensory Environment (MSE) to get the most benefit comes from preparing autistic children to be able to control changes in sensory processing. It can help autistic children to have good learning behavior and alertness compared to inappropriate environment suitable for each child's emotional processing (Unwin et al., 2021) Snoezelen or Multi-sensory Environment (MSE) in this study uses the concept of allocating the environment according to the sensory process pattern of each child. In this study, the conceptual framework was chosen, divided into 4 formats; hypo-responsiveness, seeking, sensitivity and avoiding. The sensory stimuli include 6 senses such as visual, auditory, gustatory, olfactory, vestibular and proprioceptive senses. Preparing the suitable environment in each person's sensory processing pattern is a systematic process. Autistic children have different cognitive processing patterns according to each individual's sensory processing disorder or sensory integration disorder. From the experience of providing occupational therapy services, the researchers found that when the child returns to the home, the therapy is not as effective as it should be because the equipment at home is not appropriate as in the institute. When the child attends the evaluation progress, the

development result is not as good as expected. For example, the developmental level has not changed much or in some cases the set goals have not been achieved. Autistic children during preschool age also face this obstruction. When they do the re-evaluation in 6 months, only 60 percent of all service recipients is improved. When inquiring about problems and obstacles, it was found that the parents lack understanding in arranging therapy activities to suit each child's sensory learning style by using in-house resources. Most of them adhere to the formats and equipment available in the institution. However, they have more understanding after they learn basic instructions on how to use devices around their houses. In order to create appropriate practice for preschool autistic children, the researchers therefore are interested to development a program by applying the Snoezelen concept for parents and caregivers of preschool autistic children and using the environment available in their house and communities

Objectives

To develop the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool children with autism.

Methods

Research Model

The research on the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool children with autism is a research and development (R&D) design aimed to create tools or program consisting of 2 steps as follows:

Step 1 (R1) Studying, analysis and synthesizing related knowledge and designing a program including:

- Studying theoretical concepts from related documents and research by analyzing and synthesizing documents to develop the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool

children with autism.

- Studying the needs of developmental stimulation program of parents and caregivers of preschool children with autism.

- Designing a developmental stimulation program by applying the concept of Snoezelen for parents and caregivers of preschool children with autism, evaluating the validity, and piloting the program. The content validity was examined by 5 experts, including 1 expert in community work, 2 experts in autistic children, and 2 experts in Snoezelen technique. Then, the index of item objective congruence (IOC) was calculated. The scoring of each question item included: +1 means the content is consistent, 0 means not sure whether the content is consistent or not, and -1 means the content is inconsistent. The scores were then calculated for the IOC value of each content. The IOC must be more than 0.5. If the content had an IOC lower than 0.5, it would be eliminated or edited according to the experts' recommendations (Aphiwatthanakul, Kittipanya-ngam, Suwantho, Bunrot, & Sumanon, 2020). The IOC was calculated by the following formula:

$$IOC = \frac{\text{Sum of scores of all experts}}{\text{Total number of experts}}$$

Then, the program was modified according to experts' recommendations before using the program. Step 2 (D1) Developing the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool children with autism.

- Pilot (by the pilot version) with 8 families of autistic children for 3 months. The aim of this step was to study the possibility of using the developmental stimulation program by parents and caregivers and to consider the appropriateness of the program according to the current conditions and the social context of each family by inter viewing and observing video footage while doing activities at home.
- Improvement of the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool children with autism after the pilot study. Then, a manual for

users was created.

Target Population

The target population consisted of parents and caregivers of preschool children with autism who had sensory integration disorder by selecting different characteristics; for example, family who were living in an urban area and outside the city, having a difference in family income, having an independent career and serving in the government service, and received services at the Rajanagarindra Institute of Child Development during the months of January to December 2022 for total of 8 families.

Data Collection

The selected target population were invited by the researcher to participate during January to July 2022. Throughout the period of the research project, the target population participated in 3 activities consisting of:

- Participating in group discussions to reflect on experiences and approaches to promoting the development of preschool autistic children who had impairments in the integration of the sensory nervous system related on the problems and suggestions. There were 5 topics for exchanging experiences as follows:

1. In promoting the development of autistic children at home, what methods did you use to promote children's development? What did you think you could do well? What were the problems and obstacles?
2. How did you allocate the environment at home to promote development?
3. What assistants did you need from an occupational therapist so that you could effectively promote the development of your child with autism at home?
4. If you wanted to promote consistent development at home and included it in daily life, how should it be applied or integrated?
5. What suggestions did you have for providing services to help promote development by parents and caregivers in an efficient and sustainable manner?

- Pilot testing the developmental stimulation program in the family. consisted of a set of 3 activities: Activity 1: Know and understand the learning nature of your child, with the objective of supporting parents and caregivers to classify the

learning characteristics of preschool children with autism in their families and to gain knowledge about Snoezelen in analyzing children's learning characteristics. Activity 2: Search for treasures of learning around you with the objective of supporting parents and caregivers to allocate the environment to suit their children's learning characteristics. Activity 3: Design a new way of life with the objective of supporting parents and caregivers to design an environment that is appropriate for children's learning characteristics and so that parents and caregivers can design a daily schedule of activities to care for children each day. All 3 activities would take no more than 1 hour each and all 3 activities would be carried out in 1 day.

- Reflected on issues, obstacles, and suggestions to lead to actual implementation using the following 4 learning points:

1. How did you feel about implementing the Snoezelen model for parents and caregivers of preschool children with autism in practice at home?
2. What were the highlights of the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool children with autism?
3. What were the limitations in using the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool children with autism?
4. Did you have any suggestions for improving the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool children with autism?

Research Tools

1. Focus group discussion for parents of preschool children with autism in relation to problems, obstacles, and suggestions to lead to implementation.

Data Analysis

1. Thematic analysis for qualitative data
2. Calculating the IOC scores for content validity testing

Results

Table 1: General information for parents or primary caregivers of preschool children with autism.

General Information	Amount	Percent
Sex		
Male	3	37.50
Female	5	62.50
Occupation		
Government Service	1	12.50
Self-Employed	4	50.00
Company Employee	2	25.00
Housewife	1	12.50
Family Characteristics		
Single Family	5	62.50
Extended Family	3	37.50
Educational Qualification		
Vocational Certificate	4	50.00
Bachelor's Degree	4	50.00
Address		
In the urban area	4	50.00
Outside the city	4	50.00

The developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool children with autism.From the knowledge extraction and analysis of the essence of the content of the data from group discussions on the issues of experiences and guidelines for promoting the development of preschool autistic children who had sensory integration disorders, it could be summarized into 5 points: 1) Using yourself as a medium 2) Using everyday activities as a medium 3) Arranging an environment for playing and promoting development 4) Information, knowledge and methods that could be practiced at home and 5) Exchanging knowledge from families with autistic children led to the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool children with autism which included a set of 3 activities: Activity 1: Know and understand the learning nature of your child, with the objective of allowing parents and caregivers to classify the learning characteristics of preschool children with autism in their families and to gain knowledge about Snoezelen in analyzing children's learning characteristics. Activity 2: Search for treasures of learning around you with the objective of supporting parents and caregivers to allocate the environment to suit their children's learning characteristics.

Activity 3: Design a new way of life with the objective of supporting parents and caregivers to design an environment that was appropriate for children's learning characteristics and to let parents and caregivers to design daily care schedules for their children each day.

Validity of the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool children with autism.After developing a program for developmental stimulation by applying the Snoezelen approach for parents and caregivers of preschool children with autism, the developed program was submitted to experts to consider content validity. It was found that all 3 activities had IOC scores between 0.6 - 1.0, which was within an acceptable level. The details of the IOC score for each inspection issue are presented in Table 2.

Table 2: General information for parents or primary caregivers of preschool children with autism.

Topics	Inspection Points	IOC score		
		Activity 1	Activity 2	Activity 3
Principle	1. The content is consistent with the objectives of the activity.	0.8	0.8	1.0
Media and Equipment	2. The content covers the activities.	0.8	0.6	0.6
	are completed and sufficient to carry out activities.	0.8	0.6	0.8
Sub Activities	Activity: starts the group/clarify the rules.	1.0	-	-
	Activity: What is Snoezelen?	1.0	-	-
	Activity: Analyze the nature of your child's learning.	0.8	-	-
	Activity: Exchange knowledge about the nature of your beloved child.	0.6	-	-
	Activity: What is treasure activity?	-	0.8	-
	Activity: Activities to search for treasures around you.	-	0.8	-
	Activity: Activities to collect treasures around you.	-	0.8	-
	Activity: Explore your family's daily and seasonal activities.	-	-	1.0
	Activity: Design a new way of life.	-	-	1.0
Knowledge Sheet	1. Make the target group understand the content.	0.6	0.6	-
	2. Coverage with the objectives of the activity.	1.0	0.6	-
Work Sheet	It is comprehensive with the objectives of the activity.	-	1.0	1.0
IOC values per activity		0.82	0.73	0.9
Total IOC value		0.82		

The experimental results of using the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool autistic children with the target group.

From group discussions after parents of all 8 families used the developmental stimulation program by applying the Snoezelen approach for 3 months. It was found that parents reflected on the results of implementation in 4 main areas including increasing understanding of your child's nature, the progress of development, strength and limitations of the development program that had been developed and guidelines for improving the program.

Increasing understanding of your child's nature

The target group of parents reflected that the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool children with autism brings about understanding of the strength learning characteristics of their children, leading to changing in the behavior of parents and caregivers, arranging, or modifying the environment and creating a schedule that is consistent with your child's learning nature as shown in the following group discussion below:

"After the child has been assessed, we knew what the child is doing. In the past, when he was doing homework, he would sit by the bookshelf, and he

would look at something else. Thus, this time, I change him to sit on the opposite side, in front of him is the wall and set up a study table to reduce the stimulation.” (1st parent)

“When I came to the program, I realized that my child did not have problem that much. He still has talent for something. We are changing the training methods; it allows us to understand our child more and know in what areas he is outstanding. Once we know what his strength is, we can start changing toys to make him speak, because sometimes it means teaching. If I speak repeatedly, he still does not follow along. However, when I have pictures and flashcards and colorful pictures, it helps him change from playing the old toys to playing with this one.” (6th parent)

“He has strengths in his eyesight, and I can use them to adjust the environment inside the house, normally I teach Math at the door of our house, so I change to teach inside, sitting facing the wall.” (7th parent)

The child's development has progressed.

The target group of parents reflected that when applying the developmental stimulation program by applying the Snoezelen concept for parents and caregivers of preschool autistic children, it could help a child to have enhanced development such as pay more attention to activities as shown in the following group discussion below.

“He seems more focused. He could do it longer; that is, he finishes before he moves to do other things. He go to play after I said ‘If you finished, you can go.’ I think it is good.” (1st parent)

“In the past, when he completed his work, my child looked at another thing. If he heard a sound, the TV sound, or something like that, he looked at it. However, I told him the rules that he must study and do homework first, he could do it better. Now, he must go to school. He must wake up early. When he wakes up in the morning, he immediately gets up and says that he must go to school to meet his friends. He wakes up earlier, sometimes he waked up late but much better than before.” (2nd parent)

Strength and limitations of the developmental stimulation program

The target group of parents reflected the strengths of the developmental stimulation program in a positive way. The program was practical, easy to use and flexible, and could be adjusted according to the specific environment and context of each family. However, the target group pointed towards the limitations in 2 areas: namely, time planning, and communication with family members.

1) Time planning

The targeted parent group reflected the conditions and limitations in creating a schedule and that may not follow schedule, as shown in the following group discussion below.

“Obstacles and problems are probably related to time. Also, the allocation of time is also not as appropriate as it should be. This might be because the parents do not have the time to focus on their children. Fortunately, he also has a mother. However, the mother is not available so this program may be inaccurate. The good thing is that this program must be done regularly, must be done every day, and then must be planned systematically with time. If the schedule does not work, everything will not be in good manner. It's a problem of time. However, it's not every day that parents have to work, only someday. The problem might be a time planning.” (4th parent)

2) Communication and understanding among family members

The target group of parent reflected the conditions and limitations of communication and understanding among family members, especially caregivers who were grandparents as they may not yet understand the changes in the environment or the scheduling of new activities. The sample group discussion is as follows.

“When we are with other people, the communication is not good compared to when there is only a child and me. It would be easier when there is only a child and me, other people might have questions and when we answered them, sometimes they wouldn't understand because they haven't practiced.” (1st parent)

“It's not really an obstacle. It is the environment. It is like when we put something at home and then we move out. But the family, including grandparents... My mother did not come to the meeting, she still does not understand why there was the change. We must

explain to her how to do this and that. Sometimes if she doesn't understand, there will be some problems.”
(3rd parent)

Guidelines for improving the program.

The targeted group reflected on guidelines for improvement. The academic content and the language should be adjusted to be easy for people in general. There should be examples in the form of animated media or short video clips. It may be newly produced content to use as an example, or it may be a video recorded by each family and then exchanged knowledge with each other. This is not only a medium for promoting child development for parents/guardians who were participating in the training, but it will also be a medium to facilitate understanding of other family members. The sample group discussion is as follows.

“I want more examples that make the content more understandable. When we read... what is the example like? so I want to have a clear example... video is the main media, I want videos that are short, in different locations, and various ages; so that when we watch them, we might think that this case is like our child or grandchild. Then the forwarding will be better. Sometimes when the media doesn't look like grandchild. When the media doesn't match, they might think this is not our case. Media should be produced more so it might suit with each child.”
(1st parent)

“There should be a video clip; a video clip explaining the content... explain in a short video clip, I understand and forward it to grandma and grandma with oral massage and provide examples in the form of videos. More media, provide more media...will be so easy that everyone will understand. Let's provide more media. Making short videos of 1 minute per content and sending them to parents. It will work well. Animated images would be better.” (4th parent)

Summary, Discussion of Results and Recommendations.

Summary of Research Results

The research of the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool autistic children aims to develop the developmental stimulation program by applying the Snoezelen technique for

parents and caregivers of preschool children with autism and analyzes the validity of the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool children with autism.

The research team conducted the research in 2 steps: Step 1: Study, analyze and synthesize basic information and design. Step 2: Develop the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool children with autism, a pilot version. It was found that parents and caregivers need knowledge and understanding of the use of Snoezelen in autistic children and would like to organize budget activities to reduce sensory integration dysfunction which are appropriate to the environment and family context, and easy to organize. The data could be used to develop the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool autistic children which consisted of 3 activities; namely, Activity 1: Understanding your child's learning nature, Activity 2: Searching for treasures, learning of your surroundings, and Activity 3: Designing of an individual new lifestyle. This is a quality model that has been inspected by experts and conducted experiments and reflections from the sample groups. It was found that the model can help parents understand the nature of their children. Children are developing and there are suggestions for flexibility in teaching schedules, increasing mutual understanding among family members, improving communication, and providing sample videos to facilitate learning and to use as a medium for sharing knowledge to each other.

Discussion

From the family's point of view, parents gave importance to the developmental program by using the environment, lifestyle, and themselves as media for treatment. Moreover, they needed information and methods that they could practice at home. They also required an exchange of learning knowledge from other families with autistic children. After the experimentation of the developmental stimulation

program by applying the Snoezelen technique in a sample of families, it was found that parents reflected on the implementation in 4 main areas: namely, increasing your understanding of your child's nature, The progression of child development, Strengths and limitations of the development program and improving guidelines. Regarding the adaptations to environment of each family from the perspective of the science of daily routine which is “occupational adaptation”, it believes that human life can be changed, and that change is a process that can occur at any time. The process of adaptation can be seen from human's daily routine. However, illness and disability often affect the way people live their lives (Wood, 1996). In the occupational therapy's perspective, adjustments of daily routine will occur in order to get family more involved in daily routine. Participation in daily routine will be the result of various elements within an individual and being affected by the external environment. All the time that there has been adjusted in daily routine, an individual might build identity and abilities to do any activities through maintaining participation in daily routine. The adjustments of these two things depend on how individuals develop and respond to life changes (Kielhofner, 2004). Regarding the adjustments of activities in each family, it was found that the adjustment was a result of unbalanced daily family activities (Wilcock, 1998). Normally, well-adjusted daily activities depend on each individual's choice and the well-adjusted daily activities affect the physical and mental health of individual.

Occupational therapy and the science of daily routine, it has been found that doing family daily routine together is something that creates happiness and full of love. They can be seen as complementing each other through actions or participation in the family daily routine together. In addition, the families who gave the information valued family routine and spending time with the children through various daily routine in order to spend more time with the children (Primeau, 1995) The family daily routine can strengthen the family bonds between children and parents depending on the frequency of routine that do together (Koontz-Lowman, 2005).

Limitations

Limitations can be presented in two points including time planning and communication and understanding among family members. For example, it may not be possible to follow the schedule. In this issue, those who used the development stimulation promotion by applying the Snoezelen technique should be flexible to schedule so that activities can continue without stress on the family.

Suggestions

For future research, the researcher who would like to apply this type of research, they should design the research to be clear and flexible, in order to carry out the research continuously and successfully. According to the implementation in real situation, researchers should completely understand in each activity because each activity require successive results. If the results in each activity are inaccurate, it will clearly affect the next activity. For future research, it may be conducted on target groups of other age groups or study in a family with diverse cultural characteristics. This is because diverse studies will help to gain a greater understanding of various dimensions. In addition, this study is just looking for a model of developmental stimulation program by applying the Snoezelen technique that meets the needs of parents. Hence, the results of the research will be more efficient and reliable if the future research determines the effectiveness of this developmental program by applying the Snoezelen technique before experimentation in various contexts. Furthermore, the researcher should study on the satisfaction of parents and caregivers of autistic children after using the program including study on the result of the usage of the developmental stimulation program by applying the Snoezelen technique for parents and caregivers of preschool autistic children.

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