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URL of this article: http://heanoti.com/index.php/hn/article/view/hn20814

Stimulation Model Growth And Language Development Of Children Autism In Health Promotion

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ABSTRACT

Background: Autism is a developmental disorder caused organic brain damage, difficulty communicating verbal, nonverbal. Need supervision and parental attention. The stimulation helps stimulate the brain to produce hormones in its development. **Purpose:** (1) analyze the internal factors, external influence growth and language development of children with autism (2) analyze the relationship between nutritional status and the growth and language development of children with autism (3) analyze the effect of stimulation of the growth and development of the language development of children with autism (4) formulate a model of growth stimulation and language development of autistic children in health promotion. **Method:** This type of research was a research and development (R&D), with quasi experimental method, time series design. The study was conducted in 7 autism school in Yogyakarta. The total sample of 90 children with autism. Conducted in November 2015 and April 2016. Data were analyzed using multiple linear regression and Ods Ratio, Mann Whitney and Wilcoxon. **Results:** (1) internal factors (postnatal) and external (race) affecting growth and language development of children with autism, (2) there was a relationship with the nutritional status of growth and language development of children with autism $p<0.05$, (3) no effect stimulation of growth and development of the language development of children with autism with $p<0.05$, (4) the drafting of a model manual stimulation of growth and language development of autistic children. **Conclusion:** Establishment of stimulation model of growth and language development of children autism in the form of manual stimulation of growth and language development of children with autism in health promotion.

Keywords: Stimulation model, Growth, Language development, Autism, Health promotion

INTRODUCTION

Background

Health development is very important in improving the quality of human resources of a nation as it has been formulated in the Sustainable Development Goals (SDG's). Health development should be directed to the development of quality human resources both physically, mentally and socially, so that economically and socially productive. In connection with the increase of quality human resources, the role of health promotion is very important[(1)].

Autism is a developmental disorder caused by organic damage to the brain. Generally, children with autism have difficulty communicating both verbal and non-verbal, when they want something, the way he is tugging at the hands of others to get attention and in addition they are also very rigid with their regular activities as if they are undergoing certain rituals. Attitudes such as withdrawing, not weaven communication, talking to himself, singing alone, crying for no reason, circling without reason, it can even lead to the aggravation of the people around him.

Children with autism have the ability and different characteristics from each other, so that a different way to interact with themselves and the environment and make an autistic child as a unique person[(2)]. Children with autism is one of a group of children with special needs are less able to organize anything, less planning something,

have difficulty finding a solution and less flexible tasks. Children with autism can not show an affectionate relationship. Stimulus sensor autistic children are processed in a different way with a normal child, resulting in children with autism have difficulty in express his affection in a manner commonly done by normal children.

Growth and language development of children with autism whether physical, emotional, intellectual, or psychosocial problems resulting in delays in growth and development of children achieving level appropriate for their age[3].

If the disorder persists then it will be a permanent disability in children, but if early growth disorders has been detected, it can be done a stimulation in accordance with the needs of children. Through stimulation that's done early child development at a later stage can walk better.

Impaired growth and language development of children with autism is a problem that is prevalent in society, so it is essential that all the components involved in the development of children with autism that parents, school teachers with special needs and people can work together in stimulation of growth and language development of children with autism by using the guidelines easy, inexpensive but accurate[4].

Stimulation was very helpful in stimulating the brain to produce hormones needed in language development. The stimulation can be provided in various forms are simple and easy to do. The stimulation can be a genuine warmth and love that parents can afford. In addition, parents can provide direct experience with the use of the five senses (sight, hearing, taste, touch and smell). Interaction between children and parents through touch, a hug, a smile, singing and listening attentively is also a form of early stimulation. When a child who is not able to speak babble, babble, it is necessary to get a response as a form of speech stimulation[5].

Parents should encourage early conversing with a soft voice and give a sense of security to children. When born, the child's brain already has billions of nerve cells that had the numbers, but the number that many are missing after birth. When the brain is getting a new stimulus, the brain will learn something new. The stimulus will cause the nerve cells to form a new connection to store information. The cells are used to store information expands, while rarely or unused would be destroyed. This is where the importance of a stimulation routinely given. Stimulation is constantly given routinely would strengthen links between nerve that has been formed so that the automatic functions of the brain will become even better[6].

Problems disability in children is a fairly complex problem both in quantity and quality, given the various types of disability has its own problems. If the problems of disabled children is treated early with good and improved their skills according to their interests, then the burden on families, communities and countries can be reduced. Conversely, if not addressed properly, then the impact will aggravate the burden of the family and the state. It is therefore necessary stimulation model of growth and language development of children with autism in health promotion in the form of manual stimulation of growth and language development of children with autism that can be used by parents at home, teachers in special needs schools.

The stimulation model of growth and language development of children with autism in health promotion can provide services to children with autism who qualified with easy access to the community. Parents can be given the knowledge to do the stimulation of growth and language development of children with autism at home in the relief efforts on the rehabilitation of children with autism.

Stimulation model growth and language development of children with autism in health promotion to enhance the knowledge and parenting skills be able to work more effectively, prepare autistic children for the challenges that can not be avoided and can perform the stimulation of growth and language development of children with autism[7]. Until now the development model of stimulation of growth and language development of children with autism in health promotion in order to overcome the problems in social interaction, communication / language, limited interest / fine motor skills and talent / gross motor skills yet. It is therefore necessary stimulation model of growth and development of children with autism in the rehabilitation of children with autism can be done by parents, school teachers with special needs and the community through community empowerment to family and special school children with autism using a guide book to be effective and efficient in improving the knowledge and skills parents and teachers in monitoring uprooted and promotions (Growth monitoring and promotion)[8].

Based on preliminary studies were conducted in January 2014 by interviewing the parents' school partially Autism Yogyakarta showed that parents have never got a special material on the growth and language development of children with autism and not knowing how to stimulate growth and language development in children with autism. Hence the need for stimulation model of growth and language development of children with autism in health promotion in the form of guide books for parents and teachers of children with autism to be able to stimulate growth and language development of children with autism.

Generally, this research aims to create a model for stimulation model of growth and language development of children with autism in the health promotion. Specifically, the study aims to:

1. Analyze the factors that affect the internal and external growth and language development of children with autism.
2. Analyze the relationship between nutritional status and the growth and language development of autistic children.

3. Analyze the effects of stimulation of the growth of the language development of children with autism.
4. Formulate stimulation model of growth and language development of children with autism in health promotion

METHODS

Design and Sample

This type of research is a Research and Development (R & D). This study aims to create a specific product. In this case the researcher will develop a product in the form of "Autism Growth Stimulation Guidebook for Health Promotion" which will be used by parents to be applied in giving stimulation of autistic child growth during home and autistic teacher in giving stimulation of autistic children growth during school.

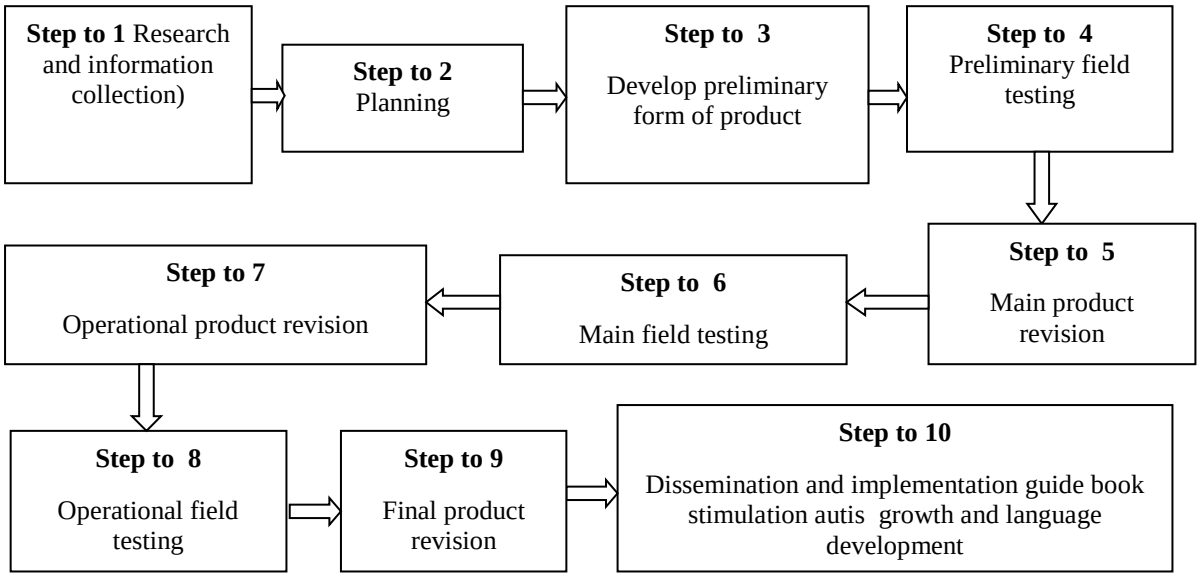

Figure 1. The steps of research

In step to 6 the researcher uses quasi experimental research design, that is research which aims to explain the influence and test the influence of variables through hypothesis testing. The design of time series design design is the serial design of time to perform repeated measurements, before and after the experiment or treatment[9]. This type of research is quantitative research. The study design using quasi experimental methods, the research aimed to explain the influence and examine the influence between variables through hypothesis testing. Research design form time series design is the design of serial time doing repetitive measurements before and after the experiment or treatment[10].

The research design is illustrated in Figure 2.

O_1	X	O_2

Information:

O_1 = Growth observations (Weight, heigh, head circumference, upper arm Circumference, Chest circumference, abdominal circumference, nutritional status) and language development in autistic children before being given stimulation treatment using a falling stimulant guidebook in the first month

X = Treatment of stimulation of growth and language development of children with autism using guidebook stimulation of growth and language development

O_2 = Growth observations (Weight, heigh, head circumference, upper arm Circumference, Chest circumference, abdominal circumference, nutritional status) and language development in autistic children after being given stimulation treatment using the stimulation guide book collapsed in the second, third and fourth months

Figure 2. The research design

Context of Study

The population of this research was all autistic children, all parents who have children with autism in the region of Yogyakarta province, with a population (n = 90 children with autism). A sample of 90 children with autism and parents of autistic children were taken by total sampling of 16 weeks (4 times observation growth and language development of children with autism.

The statistical test used was multiple linear regression analysis and path analysis, Mann Whitney, Wilcoxon and Ods Ratio.

RESULTS

Table 1. Characteristics of autistic children by age, sex and classes in autism schools

No	Characteristics of the child	Frequency	Percentage
1.	Age		
	6 year	4	4.45
	7 year	11	12.22
	8 year	75	83.33
2.	Gender		
	Boys	70	77.80
	Girl	21	22.20
3.	Class		
	Kindergarten	12	13.30
	Primary school	78	86.70

From Table 1 it can be seen that the number of children with autism was the most aged 8 years, male gender and primary school education.

Table 2. Internal and external factors that affect the growth and language development of autistic children with multiple linear regression test data analysis in autistic children in autism school

No	Factors	P-value						
		Growth						Language Development
		Weight	Height	Head circumfe-rence	upper arm circumfe-rence	Chest circumfe-rence	abdominal circumfe-rence	
1	Internal Factors							
a	Genetic	0.849	0.225	0.548	0.709	0.775	0.597	0.028*
b	Race	0.034*	0.854	0.239	0.354	0.219	0.784	0.661
c	Gender	0.192	0.879	0.720	0.242	0.192	0.959	0.153
2	External Factors							
a	Prenatal	0.300	0.060	0.330	0.492	0.549	0.716	0.286
b	Intranatal	0.308	0.373	0.274	0.223	0.827	0.742	0.571
c	Postnatal	0.282	0.337	0.327	0.410	0.880	0.702	0.037*

From Table 2 it can be seen internal factor and external factor that affect the growth of children with autism (Weight, Height, Head circumference, Upper Arm Circumference, Chest Circumference and Abdominal Circumference). Race affected weight of children with autism (p-value = 0.034). Genetic affected the language development (p-value was 0.028). Postnatal factor affected the language development (p-value was 0.037).

Table 3. Nutritional Status (BMI) month 1 to 4 in children with autism (n = 90)

No	Nutritional Status	Month to 1		Month to 2		Month to 3		Month to 4	
		f	%	f	%	f	%	f	%
1	Very Thin	2	2.2	2	2.2	2	2.2	0	0
2	Thin	9	10.0	9	10.0	9	10.0	4	4.4
3	Normal	44	48.9	44	48.9	44	48.9	48	53.3
4	Fat	19	21.1	19	21.1	19	21.1	22	24.5
5	Obesity	16	17.8	16	17.8	16	17.8	16	17.8

From Table 3 it can be seen that the nutritional status of children in the first, second and third and fourth month was mostly with normal nutritional status.

Table 4. Language development / communication compared to Body Mass Index (BMI) 1st months to 4th month, in children with autism

No	Language Development	1st month	2nd month	3rd month	4th month
1.	Eye contact	0.587	0.487	0.365	0.382
2.	Facial expressions	0.517	0.300	0.405	0.349
3.	Gestures	0.582	0.703	0.682	0.625
4.	Play with friend	0.382	0.643	1.037	1.077
5.	Empathy	0.318	0.283	0.447	0.446
6.	Reciprocal relationship	0.432	0.346	0.672	0.603
7.	Expressed a desire	0.743	0.487	0.487	0.543
8.	Talk understandable	0.326	0.333	0.202	0.286
9.	Pointing image	0.446	0.394	0.407	0.304
10.	Mentioned color	0.365	0.288	0.405	0.543
11.	Deciphering the word	0.568	0.750	1.000	0.988
12.	Call a friend's name	0.531	0.672	0.837	0.699
13.	Calculate	0.247	0.335	0.303	0.276
14.	Understand adjectives	0.325	0.524	1.021	0.817

From Table 4, it can be seen that the development of language / communication compared to the Body Mass Index (BMI) 1st months to 4th month in children with autism with Odd Ratio results that increase was playing with friends (1.077).

Table 5. Effect of stimulation of the language development with the Wilcoxon test data analysis in children with autism

No	Language Development	Z	*p*
1.	Eye contact	-1.830	0.067
2.	facial expressions	-1.784	0.074
3.	Gestures	-3.179	0.001*
4.	Play with friend	-5.211	0.000*
5.	empathy	-1.115	0.265
6.	Reciprocal relationship	-2.545	0.011*
7.	expressed a desire	-2.527	0.011*
8.	talk understandable	-4.410	0.000*
9.	pointing image	-5.086	0.000*
10.	Mentioned color	-3.735	0.000*
11.	deciphering the word	-4.831	0.000*
12.	Call a friend's name	-3.210	0.001*
13.	Calculate	-2.529	0.011*
14.	Understand adjectives	-6.300	0.000*

From Table 5 it can be seen effect of stimulation of the language development with the Wilcoxon test data analysis in children with autism in the province of Yogyakarta autism school obtained p-value <0.05 were gestures p=0.001, playing with friends p=0.000, reciprocal relationship p=0.011, expressed a desire p=0.011, understandable speech p=0.000, pointed to the picture p=0.000, mention color p=0.000, meanings of words p=0.000, call the friend's name p=0.001, calculate p=0.11 and understand the adjectives p=0.000.

DISCUSSION

The nutritional status of children in the first, second and third and fourth month was mostly with normal nutritional status. In the fourth month of very thin nutritional status there has been an increase to none. Nutritional nutritional status in the fourth month also increased.

According Handojo[11] stating the cause of autism can occur during pregnancy. In the first trimester, triggering factor usually consists of infection (toxoplasmosis, rubella, candida), heavy metal poisoning, additives (MSG, preservatives, dyes), or drugs other woods. In addition, the excessive growth of fungi in the intestines of children as a result of excessive use of antibotika, can cause intestinal leaks (leaky gut syndrome) and incomplete

digestion of casein and gluten. Increased frekeuensi high of autism disorders in children with congenital, rubella, herpes simplex encephalitis, and cytomegalovirus invection.

In children who were born during the spring with their mothers suffer from influenza mekungkinan winter when they are in the womb, has led researchers to suspect a virus infection is one of the causes of autism.

The nutritional status of children in the months to one, two and three mostly normal total of 44 children (48.9%). Meanwhile, in the fourth with a normal nutritional status of 48 children (53.3%). In the fourth month of nutritional status is very thin already have an increase of 2.2% to no. Skinny on the nutritional status of the fourth month also increased from 10% to 4.4%.

Weight loss is one measure that provides an overview tissue mass, including body fluids. Weight loss is very sensitive to sudden changes either because of infectious diseases as well as decreased food consumption. Height gives an overview function of the state of growth seen emaciated and little short. Height is very good to see the nutritional state of the past, especially with regard to the state of low birth weight and malnutrition in infancy.

Child development is influenced by three main factors that work in stimulants, namely: (1) Hereditary factors, the nature or congenital conditions inherited from parents; (2) The growth and physical maturation, influenced by the consumption of food (nutrient intake), health care, and child care in general; (3) environmental stimulation. This factor depends on the extent to which parents and the environment around the child provide psychosocial stimulation or learning processes that encourage child development. In childhood, the growth and development occurs very rapidly, if the food does not contain enough nutrients needed, and this situation lasts long, it will cause changes in brain metabolism.

Effect of stimulation of the language development with the Wilcoxon test data analysis in children with autism in the province of Yogyakarta autism school obtained p-value <0.05 were gestures, playing with friends, reciprocal relationship, expressed a desire, understandable speech, pointed to the picture, mention color, meanings of words, call the friend's name, calculate and understand the adjectives.

To communicate only with someone who takes on the basis of the existence of a particular interest, style typical talk like repeating a word that has been said to be a person to the child. Patterns communicate such strange pronunciation of words that should reverse shown himself to utter the word "you" if it wanted to convey something about him and one of the factors that affect the establishment of communication is a topic of interest. Communication difficulties occur not only because of their physical or mental deficiencies suffered by children with autism alone but the schools and teachers are in charge of teaching less attention and less approaches to establish a close relationship[(12)].

Intervention for children with autism/ autism infantile form of stimulations for the child showed a response. Actually, before the child is enrolled in a treatment program that is being followed, parents should give him endless stimulation at home so that children do not drown in his own world[(13)].

Do not leave children alone and preoccupied with the interests and activities that rigid, for example, turn on and turn on the lights, amazed watching the fan spins and no other important activities. Always try there are always people who accompany children for no sleep.

Inviting children two-way communication both verbal and non-verbal. Do not allow children engrossed with television or other games that are unidirectional and damaging his eye contact. Early moments do not expect children to respond to an invitation to communicate given to him. most of the child's responses ignorant, not understanding that the communication addressed to him or if it was aware of possible child will respond negatively as crying out loud because he felt disturbed[(14)].

Stimulation can also form taking children singing, clapping, imitating the movement or play a game together. In some children with autism, ability imitate or humming sound better than communication. It can be used as an entrance into the world of children. Although parents also should beware because children are invited easement humming continues then his communication skills are not developed[(15)].

Simple games are also good for children as game ci stimulation boo. Moreover, this game requires the presence of others. With this game parents can introduce to children with the people that is around. This kind of game can and should be done by the whole family. With performed by different people, children are given the opportunity to experience the same stimulus in different settings (playing with her mother in the room, along with his father on the porch, etc).

Children who grew up in an environment that is responsive to exhibit high exploratory behavior. Verbal stimulation is also required at this stage of development. With the mastery of language, the child will be 6 to develop ideas through questions, which affect cognitive development (intelligence). In the school years, a child's attention began to come out of the family environment, attention has been diverted to peers. It would be very beneficial if the child has plenty of opportunity to socialize with their environment. Through socialization of children will gain more social stimulation is beneficial for a child's social development. At this time in Indonesia has developed a program for preschoolers that aims to stimulate the development of children as early as possible, using tool educational games.

Tool educational games is a toy that can optimize a child's development tailored to the age and developmental level, as well as useful for the development of the physical aspects (activities that support or stimulate the physical growth of children), aspects of language (by practicing speaking, using a correct sentence), aspects of intelligence (with voice recognition, size, shape, color etc.), and social aspects (particularly in relation to the interaction between mother and child, family, and community). Play, invite children to talk, and compassion is 'food' that is crucial for a child's development, as well as the need to eat for body growth[(16)].

CONCLUSION

1. Internal and external factors that affect the growth and language development of children with autism are internal factors (race) affects weight children with autism. External factors (postnatal) affecting the language of children with autism.
2. Relations with the nutritional status of growth and language development of autistic children. The nutritional status of children in month one, the second and third highest with normal nutritional status. Language development compared with a Body Mass Index (BMI), 1st months to 4th month in children with autism in the autism school in Yogyakarta province.
3. There is an effect of stimulation of growth and language development of children with autism.

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