

POSITIVISTIC EFFECT OF THE CLASSICAL MUSIC COMBINED WITH STIMULATION, DETECTION, AND EARLY INTERVENTION (SDIDTK) ON CHILDREN'S GROWTH AND DEVELOPMENT

Authors

Rahayu Sumaningsih¹, Fatimah², Sulikah³, Budi Joko Santosa⁴

¹*Departemen Kebidanan, Poltekkes Kemenkes Surabaya, Indonesia, Telp. +62-812-1775-4389*

²*Departemen Teknik Radiologi, Poltekkes Kemenkes Semarang, Indonesia; Telp. +62-81326290373*

³*Poltekkes Kemenkes Surabaya, East Java, Indonesia, Telp. +62- 8813414293*

⁴*Poltekkes Kemenkes Surabaya, East Java, Indonesia, Telp. +62-8155642363*

About the Author

1. Third Author : Rahayu Sumaningsih, S.Kp.,M.Kes
Affiliation : Poltekkes Kemenkes Surabaya
Mailing Address : Jl. Jend. S. Parman No. 1 Magetan, East Java
Email : rahayusumaningsih@yahoo.com
Orcid ID : <https://orcid.org/0009-0007-3440-6462>
Google Scholar :
<https://scholar.google.com/citations?user=9yFLKzgAAAAJ&hl=en&oi=ao>
Phone number : +62-812-1775-4389
2. Second Author : Sulikah, SST.,M.Kes
Affiliation : Poltekkes Kemenkes Surabaya
Mailing Address : Jl. Jend. S. Parman No. 1 Magetan, East Java
Email : ikah_sulikah@yahoo.co.id
Orcid ID : <https://orcid.org/0000-0002-6872-4908>
Google Scholar :
<https://scholar.google.com/citations?user=onAu9J8AAAAJ&hl=en>
Phone number : +62-8813414293
3. Third Author : Fatimah, S.ST., M.Kes.
Affiliation : Poltekkes Kemenkes Semarang
Mailing Address : Jl. Tirta Agung, Pedalangan, Banyumanik, Semarang, 50239,
Email : fatimah_yunaeza@yahoo.com
Orcid ID : <https://orcid.org/0000-0002-1333-593X>
Google Scholar :
<https://scholar.google.com/citations?hl=en&user=xKDXUsgAAAAJ>
Phone number : +62-81326290373
4. Fourth Author : Budi Joko Santosa, SKM, M.Kes.
Affiliation : Poltekkes Kemenkes Surabaya
Mailing Address : Jl. Jend. S. Parman No. 1 Magetan, East Java
Email : santosabudijoko@yahoo.co.id
Orcid ID : <https://orcid.org/0000-0002-6121-9490>
Google Scholar :
<https://scholar.google.com/citations?user=ANNfJlwAAAAJ&hl=en&oi=sra>
Phone number : +62-81556423632

ABSTRACT

According to several studies, music and stimuli are believed to provide a sense of security, comfort, and fun, including for children's growth and development. The purpose of this study was to analyze the positive impact of the combination of classical music and stimulation, detection, early intervention of growth and development (SDIDTK) on the growth and development of children. The method used in this study was a quasi-experimental design with a pretest-posttest with a control group. The two intervention groups were given a combination of natural and music therapy and SDIDTK, each intervention was given for 30 minutes and lasted for three consecutive days. A sample of 60 people was divided into two groups, namely children with classical music and SDIDTK as the treatment group and the control group. The dependent variable is classical music and SDIDTK and the independent variable is children without music and SDIDTK. Data analysis using t-test statistics. Results of analysis of body weight before and after intervention show shows the p-value (0.000) < alpha (0.005), so there is a significant difference in the averages of head circumference before and after the intervention. While head circumference averages before and after intervention show all three groups are below 0.05, meaning that the p values (0.009, 0.000, and 0.008) < alpha (0.05), so there is a significant difference in average body weight before and after the intervention. The conclusion of this study recommends the use of classical-natural music therapy in combination with SDIDTK for a positive influence on children's growth and development.

Keywords: classical music, growth and development, SDIDTK.

ABSTRAK

Menurut sejumlah penelitian, musik dan stimulus diyakini dapat memberikan rasa aman, nyaman, dan menyenangkan, termasuk bagi tumbuh kembang anak. Tujuan penelitian ini adalah untuk menganalisis dampak positif kombinasi musik klasik dan SDIDTK terhadap tumbuh kembang anak. Metode yang digunakan dalam penelitian ini adalah quasi eksperimen dengan desain pretest-posttest with control group. Kedua kelompok intervensi diberikan kombinasi terapi alam dan musik dan SDIDTK, masing-masing intervensi diberikan selama 30 menit dan berlangsung selama tiga hari berturut-turut. Sampel sebanyak 60 orang dibagi menjadi dua kelompok yaitu anak dengan musik klasik dan SDIDTK sebagai kelompok perlakuan dan kelompok kontrol. Variabel terikatnya adalah musik klasik dan SDIDTK dan variabel bebasnya adalah anak tanpa musik dan SDIDTK. Analisis data menggunakan statistik uji-t. Hasil analisis berat badan sebelum dan sesudah intervensi menunjukkan p-value (0,000) < alpha (0,005), sehingga terdapat perbedaan yang signifikan rata-rata lingkaran kepala sebelum dan sesudah intervensi. Sedangkan rata-rata lingkaran kepala sebelum dan sesudah intervensi menunjukkan ketiga kelompok berada di bawah 0,05, artinya nilai p (0,009, 0,000, dan 0,008) < alpha (0,05), sehingga ada perbedaan yang signifikan rata-rata berat badan sebelum dan sesudah intervensi. Kesimpulan penelitian ini merekomendasikan penggunaan terapi musik klasik natural yang dikombinasikan dengan SDIDTK untuk memberikan pengaruh positif bagi tumbuh kembang anak.

Kata kunci: musik klasik, pertumbuhan dan perkembangan, SDIDTK.

INTRODUCTION

The rapid growth and development in the first 1,000 days of life make efforts to avoid various disorders of children development very important (Sumiaty et al., 2021). The rapid growth and development of children at this age at an early age is very influential so it requires careful monitoring in the first 1000 days (Oluwasogo; Henry; Abdurashed; Olawuni; and Olabisi, 2016). The first thousand days of life are counted from the moment of conception in the mother's womb until the child is 2 years old (Rahmadhita, 2020). In children aged 2 years, their height has reached half of the adult height and their brain development has reached 80% of the adult brain (Straatmann et al., 2020). Many studies discuss growth and development and the various influencing factors (Dwijayanti, 2022; Sirajuddin et al., 2021). Growth is an increase in physical size, such as weight and height (Dwijayanti, 2022). Development is the increasing ability of the structure and function of the body to become more complex, such as the baby's ability to increase from rolling over to sitting, standing, and walking (Prado et al., 2020). This ability must be age-appropriate, or called child development milestones (Wiguna et al., 2020). The growth and development of children can be influenced by internal, external, and mixed factors (Dwijayanti, 2022; Manggala et al., 2018). To minimize the existence of various abnormalities during this period of rapid growth and development, many researchers recommend not only strict monitoring and early detection, but also efforts to expedite the course of labor, provide comfort to the mother in labor, reduce stress, and minimize the possibility trauma to the baby (Ntambara & Chu, 2021; Padila et al., 2019; Rahayu et al., 2021). Monitoring growth and development is an activity to find early any deviations in growth (undernutrition or poor nutritional status, short children), deviations in development (delayed speech), and deviations in mental-emotional children (impaired concentration and hyperactivity) (Marwasariaty et al., 2019).

Growth and development monitoring aim to determine the growth and development of children and to find early developmental disorders so that they can be followed up immediately so that the results are better (Kassebaum et al., 2019). Some research recommends giving a stimulus to mothers who are in labor so that the goal of helping deliveries with the birth of healthy babies can be achieved (Muchlis et al., 2020). Stimulus is also performed on children during the period of rapid growth in the first 1000 days (Mellor, 2019). The right stimulus will stimulate the toddler's brain so that the development of movement, speech, and language skills, socialization, and independence takes place optimally (Mazaheryazdi et al., 2018). Of the various types of stimulus that exist, two of them are instruments of stimulation for early detection and intervention for child development, which in Indonesia are better known as SDIDTK and music (Sari et al., 2019). Since 2007 the Ministry of Health (Kemenkes RI) in collaboration with the Indonesian Pediatrician Association has developed SDIDTK for ages 0 to 6 years (Suryandari & Purwanti, 2018). Research proves that comprehensive and coordinated SDIDTK activities carried out in the form of partnerships can help improve the quality of early childhood development and readiness to enter formal education (Padila et al., 2019; Rahayu et al., 2021). Indicators of success in fostering child growth and development are improving children's health and nutritional status, mental, emotional, social, and independence (Bhargava & Bhargava, 2017; Nounkeu & Dharod, 2021). Apart from SDIDTK and music relaxation, children need good nutrition, care, and health status (Rahma & Nadhiroh, 2017). The right stimulus at this time helps children to grow healthy and be able to reach their optimal abilities, which can then make a good contribution to society. If growth and development deviations are found, early intervention is carried out as a corrective action by utilizing the child's brain elasticity so that the child's brain returns to normal or the deviation does not get worse (Prado et al., 2020; Sumiaty et al., 2021).

The latest research related to SDIDTK is conducted by Permatasari dkk. (2022) regarding the analysis of growth stimulation in early childhood using the SDIDTK application. This research recommends the importance of understanding parents on fulfilling nutritional intake for babies in supporting their optimal growth and development (Permatasari et al., 2022). While research related to the role of music in the smooth delivery process, reducing the stress of mothers in childbirth and the birth of healthy children, and its effect on early childhood growth and development has also been carried out a lot. Bautista et al (2022), for example, discuss music in early childhood teacher education: raising awareness of a worrisome reality and proposing strategies to move forward (Bautista et al., 2022). Nie et al (2022) also discuss the Effects of Music Training on the Auditory Working Memory of Chinese-Speaking School-Aged Children: A Longitudinal Intervention Study (Nie et al., 2022). This research tries to explore the impact of the combination of SDIDTK and classical music on children's development.

This research using the quasi experiment method aims to analyze the positivistic impact of the combination of classical music and SDIDTK on children's growth and development. The implications of this research can provide added value to previous research related to the effect of SDIDTK and classical music on child development. Besides that, it can add insight into related research that helps the number of references for health student learning materials such as midwifery and nursing education.

METHODS

Research Design

This study used a quantitative experimental method with a descriptive design. This method is widely used in similar studies to determine the effectiveness of a treatment in one group which is then compared to other groups.

Sampling

Respondents in this study were children aged less than 5 years, as many as 60 children were taken from three early childhood education programs (PAUD) and kindergarten (TK) in Plaosan District, Magetan Regency, then divided into three groups; The first group was given classical music intervention, namely Melati PAUD students in Plaosan Regency. The second group was given an intervention in the form of Stimulation, Detection, and Early Intervention on Child Development (SDIDTK), they were students of Kindergarten Telasih Puntuk Doro Village. The third group without treatment as control was in Tunas Harapan 2 Kindergarten, Sendang Agung Magetan Village.

Instruments

The data collection tool in this study was an evaluation sheet questionnaire according to the Developmental Pre-Screening Questionnaire (KPSP). This questionnaire was divided into 2 parts: first Respondent Characteristics Questionnaire contained questions about the characteristics of the respondents which included, name, age, and origin of PAUD. Second questionnaire was The Developmental Pre-Screening Questionnaire (KPSP) consists of 10 questions that need approximately 60 minutes to fill. Two groups were given classical music therapy intervention according to the type of music for approximately 30 minutes every day for three consecutive days, the growth and development of which were previously measured using the Maternal and Child Health Book and the Pre-Developmental Screening

Questionnaire. Group One was given classical music, group two was given SDIDTK, and group three was given no treatment as a control. After the intervention within three days, another measurement was carried out using the MCH handbook and the Pre-screening Questionnaire book

Data Analysis

The data were analyzed and interpreted by testing the hypothesis using SPSS with the stages: univariate analysis was carried out to describe the frequency distribution of each variable. The results of the analysis were presented in the form of tables and narratives. Bivariate analysis was performed to examine the relationship between the two variables, namely each independent variable and the dependent variable. This study used a parametric test because the data scale was numerical.

RESULTS AND DISCUSSION

Results

Table 1: Characteristic Respondents Based on Age and Education

Age (Months)	Treatment Group		Control Group		Total		Homogeneity
	F(x)	%	F(x)	%	F(x)	%	
36-48	20	33,3	-	-	20	33,3	0,180
60-72	20	33,3	20	33,3	40	66,6	
Total					60	100	
Education							
PAUD	20	33,3	-	-	20	33,3	0,501
TK	20	33,3	20	33,3	40	66,6	
Total					60	100	

The table above shows the characteristics of the respondents where the age group of 36-48 months in the intervention group found 20 respondents (33.3%). Age 60-72 months in the intervention group obtained 20 respondents (33.3%) and the control group obtained 20 respondents (33.3%). Meanwhile, in terms of education for the PAUD category based on the intervention group, there were 20 respondents (33.3%), and in the control group there were no respondents. Kindergarten education in the intervention group obtained 20 respondents (33.3%) and the control group obtained 20 respondents (33.3%). From the data on age and education obtained homogeneous characteristics.

Table 2: Respondent's Age

Respondent	Min	Max	Mean±SD	Sig (p)
Age	59,5	64,6	62,1±9,7	0,000

The table above shows that the lowest age characteristic is 59.5 months and the highest age is 62.1 months with a mean of 62.1 and a standard deviation of 9.7 with $p < 0.05$. So that

the distribution according to the Kolmogorov-Smirnov Test is declared normal.

Body Weight

Table 3: Body weight before and after Intervention

	Pre	Post	Δ	T	Sig	CI 95%
	Treatment	Treatment				
	Means \pm DS	Means \pm DS				
Grup 1	17.800 \pm 1.935	18.000 \pm 2.051	-,200	-2.906	0,009	-.344 - -.055
Grup 2	17.602 \pm 2.217	17.825 \pm 2.149	-.222	-4.188	0,000	-.333 - -.111
Kontrol	16.200 \pm 2.587	16.300 \pm 2.555	-,100	-2.939	0,008	-.171 - -.028

Analysis:

The table above shows the p-value (0.000) < alpha (0.005), so there is a significant difference in the average head circumference before and after the intervention. This means the results show that there is an increase in the value of head circumference before and after the intervention.

Averages of Head Circumference

Table 4: Head circumference averages before and after intervention

Respondent	Pre	Post	Δ	T	Sig
	Treatment	Treatment			
	Means $\pm\Delta$	Means $\pm\Delta$			
Grup 1	7,30 \pm 1,41	8,70 \pm 1,30	-1,4	-12.457	0,000
Grup 2	8,15 \pm 1,66	9,65 \pm 0,93	-1,5	-6.097	0,000
Control	5,70 \pm 1,34	7,00 \pm 1,37	-1,3	-12.365	0,000

Analysis:

The table above shows that all three groups are below 0.05 too sir, meaning that the p values (0.009, 0.000, and 0.008) < alpha (0.05), so there is a significant difference in average body weight before and after the intervention. This means the results show that there is an increase in body weight values before and after the intervention is carried out.

Discussion

The finding show that growth results according to weight indicators in the three groups have exceeded normal weight status according to the Towards Healthy Card (Table 3). Both the intervention group and the control group experienced an increase in body weight. Before and after the music intervention the average weight difference was 200g, before and after the SDIDTK intervention the average weight difference was 223g, for the control group 100g. According to the Towards Healthy Card, every month toddlers gain weight according to their age (Santoso & Nugroho, 2021). While stimulation is a play intervention according to the age or preferences of the child, so it has the effect of increasing the hormone of happiness which can increase appetite (Sutarmi et al., 2022). Through this stimulation, group one was given a natural classical music intervention, which was taught to listen, sing, or dance which increases the happiness hormone thereby increasing appetite which in turn can increase body weight.

The second group was given intervention of SDIDTK, where they were taught to see, hear, play, and interact properly according to the child's age to create a pleasant atmosphere. The atmosphere can increase hormones. Happiness can increase appetite which in turn can increase body weight (Mazaheryazdi et al., 2018). Group three without treatment, the age of less than 5 years is a phase of accelerated growth, experienced a 100g increase in body weight. According to the researchers, weight gain occurs according to the Towards Healthy Card which is in the green line, both those who are given intervention and those who are not given intervention (Kementerian Kesehatan RI, 2010). Respondents' body weight continued to increase even though their weight varied. SDIDTK stimulation contributed to the largest weight gain compared to the combination of natural classical music stimulation and no intervention. In addition to parenting, eating, and providing stimulation are very important, stimulation is useful for the growth and development of organs, and the stimulation provided will enrich the experience and affect the cognitive, visual, verbal, and mental development of children.

The size of the head circumference in the three groups is a minimum of 46 cm and a maximum of 53 cm (Table 4). According to the SDIDTK manual, if the result is less than 46 cm it is called microcephalic, if it is between 46-53 cm normal, if it is more than 54 cm it is called macrocephalic (Kemenkes, 2020). The head circumference growth in the intervention group and the control group increased. Before and after the intervention, the average difference in the classical-natural music intervention group was 5 cm, the SDIDTK intervention group was 10 cm and the control group was 3 cm. Following their age, children aged less than 5 years experience a phase of rapid head circumference growth (Rahayu et al., 2021). Of the three groups, there was an increase in head circumference, $p < 0.05$. This shows that head circumference growth in the three groups of respondents were at a normal level. This stimulation needs to be understood by parents or caregivers so that head circumference growth and brain growth can be achieved optimally. Giving SDIDTK stimulates brain growth more effectively for children aged less than 5 years (Syofiah et al., 2019). At that age, the brain plays a role in creativity in gross motor skills (Anderson & Patel, 2018; Huotilainen & Tervaniemi, 2018). Gross motor movements are needed for the coordination of most parts of the child's body, the development of children's gross motor skills that are not optimal can cause a decrease in children's creativity in adapting (Prado et al., 2020). At this time it is necessary to carry out stimulation during the stages of its development. At the age of three years and over, stimulation is needed to develop children's abilities at an earlier age (Ruan et al., 2018). Stimulation is directed at readiness to enter elementary school, for example holding a pencil well, writing, knowing letters, knowing numbers, simple arithmetic, and self-study at school, socializing with friends. Those stimuli are useful for stimulating the five sense systems, including hearing, sight, touch, smell, and taste. Stimulation that is carried out from birth continuously, varied, and with an atmosphere of play and affection, will spur various aspects of intelligence, namely logical-mathematical, emotional, communication, musical, movement, visual arts, and others (Fitriahadi et al., 2021).

Child development is influenced by internal factors and external factors (Permatasari et al., 2022; Saleh et al., 2021). Internal factors or genetic factors such as hormones and intelligence. External factors include the prenatal environment, cultural influences, the environment which includes climate and weather, the stimulation provided, the family's socioeconomic status, nutritional status, and the position of the child in a family. One external factor that is very important in determining a child's intelligence is the provision of stimulation. Stimulation can come from the environment outside the individual child, for example in the form of exercises and games. Providing stimulation will be more effective if it pays attention to the needs of children according to their age and stage of development (Marwasariaty et al., 2019). According to researchers, for children aged less than 5 years apart

from the environment in the house, it is necessary to introduce the environment outside the home, because children begin to enjoy playing outside the home (McGlynn et al., 2018). The children started making friends, and many families even spent most of their time playing outside the home by taking their children to playgrounds, city parks, or places that provide play facilities for children. The environment must create a friendly playing atmosphere for children or a child-friendly environment. The more city parks or playgrounds built for children, the better it is to support children's needs. At this time children are prepared for school, therefore the five senses and receptor systems to receive stimuli and memory processes must be prepared so that children can learn well. It should be noted that the learning process at that time was by playing (Ball et al., 2019; Yanuardianto, 2019). Parents and families are expected to be able to monitor the growth and development of their children so that early intervention can be carried out if the child has a disorder or abnormality.

STUDY LIMITATIONS

This study does not provide an overall picture of the population in Plaosan, Magetan, especially East Java in a broad sense, given the very limited number of samples. This research did not involve a large number of respondents due to limited funds, time, and manpower, especially during the Covid-19 pandemic, when the government imposed social distancing regulations to prevent transmission of the virus.

CONCLUSION AND SUGGESTION

This research attempts to prove the positive effects of classical music and SDIDTK stimulus on children's growth and development through the quasi experimental method in Plaosan District, Magaten Regency, East Java. The results of this study are of course not able to be used as an illustration that explains the positive influence of classical music and SDIDTK on child development due to several factors, especially the lack of respondents who were used in the study, location, time, economy, social culture, genes, and others. However, in general, many studies have proven the positive influence of music and SDIDTK on children's development. However, what has been proven in this study is that the stimulation of a combination of natural-classical music and SDIDTK is better at increasing children's development than without stimulation. Early detection stimulation and child development interventions significantly increase children's growth and development compared to natural-classical music stimulation and no stimulation. Even so, it is acknowledged by researchers that without stimulation and intervention, growth and development still occur. Therefore, in the future, more detailed research by involving more respondents, covering wider socio-economic areas, likes, and races will be better and provide added value to the results of this research article.

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