



## Development of Early Detection Instruments for Development in Children with Special Needs

Nurwening Tyas Wisnu\*, Herlina Tutik, Tinuk Esti Handayani

*Department of Midwifery, Health Polytechnic of the Ministry of Health Surabaya Address: Jl. Jend S Parman 1, Magetan, Jawa Timur, Indonesia.*

\*Corresponding Author: Nurwening Tyas Wisnu

### Abstract

Golden age is a very important period to pay attention to the development of children, especially if there is a suspicion that the growth and development is different from children of his age. Objective: To develop early detection instruments for growth and development in children with special needs. Method: The research design was Research and Development carried out in 2 stages. The first stage was identifying the DDTK instrument from the SDIDTK and Denver II manuals and then conducting FGDs with 70 participants. The second stage is test results development of 30 parents and their children with special needs to get recommendations on the results of instrument development. Methods to identify children with special needs by means of observation, interviews, documentation, orders and a combination of 3 methods. Data analysis uses descriptive analysis, validity test and using product moment and reliability using Alfa Chronicle. There are eight questionnaires to detect blind, deaf, mentally retarded, disabled, disabled, autistic, ADHD and special intelligent. The development of this instrument has the addition of aspects of behavior and physical appearance that exist in children. The development of instruments for early detection of development of children with special needs consists of 8 questionnaires. The results of the instrument trial showed good results and the opinion of special school teachers and ABK therapists was very positive with the development of this instrument so it is recommended to be disseminated to posyandu cadres, the community and health workers.

**Keywords:** *Instrument, Early detection of growth and development, Children with special needs.*

### Introduction

#### Background

Children are the next generation of the nation, the quality of development of toddlers in Indonesia needs serious attention, namely getting good nutrition, stimulation that accommodates, and affordable by quality health services, detection, early intervention deviations in growth. The growth and development of children has increased rapidly at an early age, namely from 0 to 5 years. This period is often also referred to as the "Golden Age" phase [1].

Golden age is a very important time to pay close attention to the growth of children so that as early as possible can be detected in case of abnormalities. The problem of individual development from birth, childhood, adolescence to adulthood is an interesting problem to look at. According to

UNICEF in 2011, data obtained still high incidences of growth and developmental disorders in children under five, especially motor development disorders obtained (27.5%) or 3 million children are impaired. According to who in 2011 reached 8.1% of toddlers have developmental disorders, 1.92% of school-age children bear mental retardation National data of the Ministry of Health, 2010 that 16% of toddlers in Indonesia experience developmental disorders, both fine motor development and rough motor, social independence, lack of intelligence and delay [2].

It is necessary to do early detection of child development so that there is no delay in rough motor development, especially toddlers [3].

It is necessary to participate all parties, both teachers, health workers, posyandu cadres in monitoring the growth of early childhood.

Knowledge about the development of early childhood becomes a provision in carrying out Posyandu activities. Posyandu cadres regularly observe the development of children so that they can provide appropriate stimulation for children who come to Posyandu [4]. The impact that occurs in a child with little special needs will inevitably affect how he/she lives his daily life. These impacts include physiological impacts related to the child's physical, both appearance and coordination.

Children will often have difficulty to control the coordination of motion, if there are abnormalities in their limbs, psychological impact psychological impact is an impact related to the mental state of the mental state due to abnormalities, will interfere with the psychiatric process, sociological impacts this impact arises because of the child's relationship with the surrounding environment. The differences that exist in children with special needs often give rise to an unstable mind and mental, so that the child has difficulty in mingling or socializing [5].

Based on the problems and impacts that occur, early detection of children with special needs is needed so that treatment can be done as early as possible in the hope that children can still follow formal education in their schools, can be independent, socialize and not become minder in their environment. Therefore, it is very necessary to have an early detection instrument for the growth of children with special needs as a measuring instrument.

### Research Objectives

In general, this research aims to develop early detection instruments for children with special needs. The purpose is specifically to identify the instrument early detection of child development body from the SDIDTK handbook carried out in children with special needs, develop instruments early detection of children with special needs, conduct tests the validity and reliability of instruments early detection of children with special needs, socialize the implementation of early detection

instruments of children with special needs, test the results of the development of early detection instruments of children with special needs and develop recommendations of research results.

### Method

The design in this research is descriptive research with Research and Development (R & D) approach. The development of instruments carried out in this research is to conduct research in two stages. The first stage consists of 1) Identifying the instruments of early detection of child development body from the SDIDTK handbook carried out on children with special needs; 2).

Develop instruments early detection of children's bodies with special needs. 3). Conducting a test of validity and reliability of early detection instruments for children with special needs. The second stage consists of 1) Socializing the implementation of the instrument early detection of children with special needs 2) Conducting tests on the results of the development of early detection instruments for children with special needs in the control group 3) Preparing the recommendations of the research results.

Test the validity and reliability of early detection instruments for the growth of children with special needs. The target of this study was school teachers and therapists of children with special needs as many as 75 people to identify the growth and development of children with special needs using the SDIDTK handbook in 2016<sup>(6)</sup>.

### Result

- Identification of Early Detection of Child Development with special needs

The identification of Early Growth Detection in 20 respondents of children with special needs using instruments from the SDIDTK handbook. Obtained growth of 60 % in the normal category of children and skinny once 5%, child's head circumference is entirely in the normal category, development in children 80% natural category Spec 20 % cannot be measured development, children's viewing power is 75 % in the normal category and 25 % suspected of visual impairment, hearing power 30 % hearing according to age and 70

% experiencing irregularities, experience emotional irregularities 25%, Autism 55% and 20% experience hyperactivity.

- The process of preparing the development of early detection instruments for the growth of children with special needs

Formulation of focus group discussion (FGD) phase 1 material on the development of early detection instruments for children with special needs

For the development of this instrument, researchers identified instruments that could be used to decide growth and development referring to the SDIDTK and Denver II handbooks to be used as focus group discussion (FGD) materials.

Focus group discussion (FGD) activities

FGD is carried out with the aim of exploring the opinions of elementary / junior high school teachers, SLB teachers, special needs child therapists about experiences during interacting with children with special needs obtained through observations, interviews, documentation and other actions FGD carried out 2 times and continued with expert consultation.

- Focus Group Discussion (FGD) 1 was held on July 9, 2020 at SLB Panca Bakti Magetan with 45 participants consisting of principals and teachers of SLB Panca Bakti Mageran and teachers of SLB Negeri Kawedanan Elementary School. The execution time ± 90 minutes. The results

obtained from FGD 1 are classifying a variety of children with special needs including: visually impaired, deaf, visually impaired, visually impaired, autistic, ADHD and special intelligent along with some signs and symptoms that appear in children who are suspected of experiencing impairment obtained through: 1) observation 2) interview 3) document 4) command 5) combined from observation, interview and document.

- Focus G Focus Group Discussion (FGD) 2 was held on July 15, 2020 at SLB Karangrejo Kab. Magetan with 30 participants consisting of principals and SLB teachers. The time used is ± 90 minutes. The results obtained from FGD 2 are distinguishing between signs and symptoms in each type of lead distinguished between behavior that occurs in children and physical appearance.

Results of FGD activities on the development of Early Detection instruments for Children with Special Needs Depreciation Instruments early detection of children with special needs is distinguished based on physical signs and symptoms that occur in children so that there are special types of need, namely: Vision Loss (Visually Impaired), Incapable of Hearing (Deaf), Mental Retardation, Body Defects (Visually Impaired), Emotional and Behavior Disorder (Tuna laras), Autism, ADHD, Special Intelligence on 3. Test the validity and reliability of Early Detection Instruments for Children with Special Needs from the age of 0-72 months.

**Table 1: Test results of validity and reliability can be seen there is a table below**

No	Types of Special Needs	Number of Questions	Validity Product Moment	Reliability Crobact > r table 0.5140	Conclusion
1	Blind	18	>0,396	score 0, 922	Valid and reliable
2	Deaf	20	>0,396	score 0, 870	Valid and reliable
3	Mentally Retarded	16	>0,396	score 0, 840	Valid and reliable
4	Diffable	13	>0,396	score 0, 816	Valid and reliable
5	Unsociable	12	>0,396	score 0,854	Valid and reliable
6	Autistic	20	>0,396	score 0, 849	Valid and reliable
7	ADHD	19	>0,396	score 0, 899	Valid and reliable
8	Smart Specials	19	>0,396	score 0, 864	Valid and reliable

Table 1 informs the test results of instrument validity using product Moment value r calculate > 0.396 while the reliability test result of Cronbach's Alpha Cronbach value > r table (0.5140). It can be concluded that the questionnaire for the development of early detection instruments for children with special needs is valid and reliable

**Expert Consultation**

Expert consultation is carried out to obtain inputs in the process of preparing the

development of early detection instruments for children with special needs based on the results of measurements of growth in children with special needs and FGD. This

expert consultation was conducted with two experts. The implementation of expert consultation is: Expert consultation I was conducted on 28-07-2020 at Al Hakim Magetan Therapy Institute with Drs. Sucip to who served as Chairman of Al Hakim Magetan Therapy Institute and Karangrejo SLB Teacher at 09.00-finish. Expert Consultation II on 13-07-2020 at SLB Panca Bakti Magetan with Khusnul Psi expert who served as SLB Panca Bakti Magetan Teacher at 08.00-finish The input of the two experts is to calculate the number of responses of children by giving a tick (✓) "yes" or "not on each of the signs and symptoms that appear both in the child's behavior and physical appearance.

The number of answers is used to determine the criteria whether the child in the category of Special Needs or Category Suspected or Normal theories, Immediately replace / remove the question on the instrument if the results are invalid or reliable, the results of validity and reliability test has been revised and the results show all valid and reliable questions, Socialization of Early Detection Instrument Development of Children with Special Needs 5.

Recommendations of FGD results on the trial of instrument development implementation Early Detection The growth of children with special needs is: It is necessary to socialize and training to posyandu cadres of toddlers related to how to fill the instruments because the instrument of early detection of development of children with special needs is a new knowledge, Socializing to the community, parents and caregivers of toddlers to recognize as early as possible when the growth and development of children is different from other children, Development of early detection instruments Development of Children with Special Needs can be applied in the health facilities.

## Discussion

Early detection instruments of growth deviation indicators measuring BB / TB and head circumference [6] Identification results of detection of growth of children with needs showed 60% growth in the normal category, 15% category of fat and skinny category 20% while the head circumference of children 100% normal [7], states that the parent is the closest environment to the child, most aware of his particular needs, most influential, and

most responsible for the child. Bronfrenbrenner in Sunardi and Sunaryo 2007: adds that the family is the first altar for children [7]. The results of Nelci Therik's research titled The Role of Parents in Children's Education Services In SLB D YPAC Bandung concluded 1) Fully aware that the child is a deposition of God. This means that as a parent, it is necessary to provide services that suit their child's needs.

The role and function of the family need to be carried out properly, regardless of the condition of the child with the background of a disabled child or a child in general. Thus, parents can fulfill their rights and obligations in the family. b) Understanding the child's condition and information that supports children's development is always explored. This makes the mindset widespread and the insights grow that eventually form one sense that each child needs good guidance, parenting, and care.

The description above is very clear that the instrument to detect normal child growth can also be used to measure the growth of children with special needs because the indicators are the same so that the results are the same. Then the growth and normal head circumference indicate that the role of parents in meeting their child's nutritional needs is very good.

If the child's nutrition is good, then the growth is good and followed by brain growth is also good so that the size of the head circumference is normal. Instruments to demonstrate children's developmental development indicators of hearing, viewing power and KPSP (pre-screening developmental questionnaire) in this study researchers used Denver II to replace KPSP. The results showed that 80% of children's development in the spec category and 20% could not be measured, hearing loss tests were 70% deviation and 30% hearing was age-appropriate, viewing tests were 75% normal and 25% impaired.

The results of this study showed that almost all children's development is abnormal and their ability decreases by 2-3 years from their age because all the respondents of the study are clearly children with special needs. Instruments for identification of emotional, mental irregularities indicators using KMME, MCHAT and Emotional Mental, [6] the development of early detection

instruments for growth was developed through Focus Group Discussion (FGD) and expert consultation. The development of instruments is based on the guidelines for stimulation detection and early intervention development (SDIDTK) of the Ministry of Health in 2018 [6].

The results of development obtained 8 instruments of early detection development of children's development which includes (1) questionnaires for early development of children with special needs on vision loss / Visual impairment (2) questionnaires for early development of children with special needs in less able to hear / Runarungu (3) questionnaires for early development of children with special needs on mental retardation / Tunagrahita (4) questionnaire detect early development of children with special needs on disability / Tunandaksa (5) Early detection questionnaires for children with special needs on emotional and behavioral disorders / Impairment (6) questionnaires for early development of children with special needs in autism / (7) questionnaires for early development of children with special needs special intelligent (8) questionnaires for early detection of development of children with ADHD.

Instruments of this development in the form of a checklist and how to fill it with several methods, among others: First observation. Observation is the process of gathering open-ended, firsthand information by observing people and places at a research site [8].

Observation is an open collection process, direct information by observing people and places at the research site. Observation guidelines are necessary, especially if researchers apply focused observations in the data collection process. In this observation focused, namely researchers focused only on some aspects of behavior and physical appearance that became the object of the target.

Second. An interview is a dialogue conducted by the interviewer to obtain information from the interviewee. Interviews were used by researchers to study the signs and symptoms that existed in respondents after being perceived by parents. In implementing it requires an interview guide that will help the interviewer in actual interviewing and conducted One-on-One interviews where

researchers ask questions for only one person at that time.

Third Documentation according to Satori & Komariah (2012, p. 148) states that the document is a record of past events expressed in oral form, writing and from work. According to Blaxter, Hughes, & Thight, 2001 one type of documentation that has a historical orientation, utilizing the available archives and also events whose documentation still survives [8]. The review of his research data was carried out by studying the history of respondents before being declared to experience special needs. The method is another command and combination of the three methods.

Instruments are tools used by researchers to collect data by making measurements. This method is done to obtain objective data needed to produce objective research conclusions as well [9]. According to Colton and Covert 2007, Instrument is a mechanism for measuring phenomena, which is used to gather and record information for assessment, decision making, and ultimately understanding.

Instruments such as questionnaires are one of the parts used to obtain factual information, observe, or assess an attitude and opinion [8]. With this instrument is expected to help the performance of users in detecting early development of children, especially those experiencing special needs. This test is performed to assess each question item in the instrument.

Reliability tests are also performed on all instruments to obtain reliable instruments by performing Alfa cronbach tests. There are two things to note on the preparation of instruments. The principle of instrument preparation according to Nursalam 2017 is validity and reliability [3].

The principle of validity is measurement and observation which means the principle of reliability of instruments in collecting data. Validity refers to the accuracy and accuracy aspects of measurement results. There are five sources of validity evidence namely content, response process, internal structure, relationship with other variables, and consequences. There are three types of validity, namely the content validity, criterion validity, and construct validity. The

validity of the content is defined as the extent to which the instrument assessment element is relevant to and represents the target build of the assessment of a particular purpose.

The validity of the content is the validity estimated through testing the feasibility or relevance of the test content through rational analysis by competent panels or through expert judgement. Reliability is the similarity of measurement or observation results when facts are measured or observed many times in different times. Tools and ways of measuring or observing play an important role at the same time. The validity and reliability of research instruments is the main thing in improving the effectiveness of the data collection process.

A good instrument is an instrument that is tested for validity and reliability. Therefore, in the process of drafting it is very important to maintain the contents of the instrument whether it is able to measure what should be measured and the measurement results are able to provide accurate information. Early detection instruments for the growth of children with special needs have been compiled by researchers in accordance with the study by researchers in the field. This instrument is developed a checklist model to make it easier for users to fill in and there are some parts that must be filled with checklist such as name, proof and signature.

Socialization of the implementation of the results of the development of early detection instruments for the development of children with special needs went smoothly. The purpose of this socialization is to equate perception in understanding each question, how to fill the instrument and how to conclude the results.

As a result of socialization of early detection development of children with needs 100% respondents understand each question, how to fill the instrument and how to conclude the results well. This is because during the socialization the researchers accompanied during the process of filling the instrument to see if the filling of the instrument is correct or not. Mentoring is the act of accompanying, accompanying and accompanying joy and sorrow. Mentoring will have a positive influence on many things, including when socializing the implementation of early

detection instruments for child development, it is also influenced by enabling, strengthening, protecting, supporting. Some respondents were very enthusiastic about the existence of instruments as a result of this development because they do not yet have instruments used to detect early development of children with special needs. The trial of the development of early detection instruments for child development was conducted on 30 respondents. All respondents were parents and children with special needs.

The results of the test of early detection instruments for the development of children with special needs of the visually impaired, deaf, visually impaired, visually impaired, autistic, and ADHD conducted by interview, observation, documentation and giving orders to children showed 100% in the criteria of special needs / guidance means the signs and symptoms contained in the questionnaire development of early detection instruments for children with special needs according to what is filled out by respondents based on the experience experienced and felt alone during child care.

The results of early detection instrument development test for children with special needs with impairment showed 66.3% in criteria with special needs / guidance and 33.7% in the expected criteria. These results can occur because it is influenced by several things including: the age of the child, the number of family members, good parenting patterns, the environment and electronic media.

Some SLB teachers and child therapists with special needs say that the development of such instruments has never existed and the development of these instruments is mostly petrifying for early detection of disability because it meets the aspects of functionality, efficiency and usability. Functionality is the ability of software to provide functions according to the user's needs under certain conditions.

Efficiency according to ISO 9126, "efficiency is concerned with the system resources used when providing the required functionality". Efficiency is one of the characteristics of software related to the resources used when the software performs its functions. Sean Mee 2012 said the use of ISO 9126 in a

software development is tailored to the characteristics of the application being developed.

Zulzalil et al (2008) showed that in web-based application development, ISO 9126 quality factors to consider are functionality, usability, reliability, and efficiency [8]. Instruments are various measuring instruments such as tests, questionnaires, interview guidelines and observation guidelines used by researchers to collect data in a study.

In this case the instruments for research and development of products produced later should be more effective, efficient, and more practical to use. Researchers adopted the concept of instrument characteristics in accordance with the characteristics of software quality according to ISO 9126 created by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). This research is based on the user's view, while aspects of the research include: (1) Functionality, (2) Reliability, (3) Efficiency, (4) Usability, According to Pressman (2010:495), in testing the functionality of software can be done using black box testing method or behavior testing.

The focus of black box method testing is on testing the functionality and output generated by the software. Implementation of black box testing method is done using test case. A test case is a set of inputs to be tested, conditions that must be executed and expected results. The test case aims to check the fulfillment of system needs in this case the need for system functionality.

Recommendations for the development of early detection instruments for children with special needs based on the results of FGD obtained that the development of early detection instruments for children with special needs can be applied in child therapy institutions with special needs and posyandu toddlers as well as in parents of children under five to detect early abnormalities that lead to lead to lead.

This recommendation is based on the results of instrument trials related to the ability, understanding and opinion of SLB teachers, therapists and parents of children with special needs. All respondents were able to fill out the instrument development

questionnaire properly. Most respondents also argued that instrument development has been good in terms of functionality, efficiency and usability. Instruments are various measuring instruments such as tests, questionnaires, interview guidelines and observation guidelines used by researchers to collect data in a study.

In this case it is an instrument for research and development. Products produced later should be more effective, efficient, and more practical to use. Researchers adopted the concept of instrument characteristics in accordance with the characteristics of software quality according to ISO 9126 created by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). This research is based on the user's view, while aspects of the research include: (1) Functionality, (2) Reliability, (3) Efficiency, (4) Usability, (5) Maintainability and (6) Portability. Research items used by researchers are aspects of functionality, efficiency, and usability in accordance with the expectations of using at the time of trial.

## Conclusion

The identification results of children with special needs using SDIDTK guidance instruments point to normal 60% growth, normal head circumference of 100%. A development of 80% specs and 20% cannot be measured, viewing power 25% suspected vision impairment, hearing 70% deviated and autism 55%. The instruments developed are by increasing aspects of behavior and physical appearance that occur in children and to detect the ability of the methods used include observation, interviews, documentation, commands and a combination of observation, interview, documentation.

Early detection instruments of development in children with special needs have qualified good instruments that are valid and reliable. The results of socialization of instrument implementation of 100% of respondents are correct how to fill out a checklist of how to conclude and the content of the questions are also correctly found in each child with special needs.

Checklist facilitates and effective time in charging. The results of the development of this instrument are recommended to be

carried out socialization and training to posyandu cadres of toddlers, communities and health workers. The next study recommended reviewing other aspects in order to develop early detection instruments for development in children with special needs more perfectly.

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