Effectiveness of Development of Baby Swim in Cipageran Public Health Care Area Cipageran Cimahi

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Abstract

The period of infants is the golden and critical period that requires early stimulation to optimize the development. Cimahi City, especially Cipageran health centre area with number of infant are 363 and those experience development disorders are 51 infant. The problem of development occure when there is an immediate threat of early stimulation. One of the development stimulations can be given is a baby swim. When swimming, every muscle in the body moves so that all muscles can developed rapidly and the brain will think to balance the body. This study aims to determine effectiveness of baby swim over infants development. The method used in this study is an observational analytic study with Research Quasy Experiment (two group Pre – post test design). A consecutive sampling is used with 32 infants as a control group and intervention group. Data collection for intervention group is done by providing a swimming intervention for infant aged 3-6 month, 3 times a week with 4 weeks with a duration of 15 minutes. The result of this research showed that there is a significant effect on development of baby swim in intervention group in comparison with control group after intervention (P value: 0,002). Baby swim can improve infant development. These finding suggest that Cipageran Health Centre is suggested to increase stimulation and conduct early detection of infants with developed intervention by baby swim, provide health education about it for the public society.

Key words : Baby, development, swim

Introduction

The number of infants in Indonesia 4.3726.000 of 21,805,008 (20.05%) (Indonesian Ministry of Health, 2012). One of Indonesia that has a large enough percentage of children in West Java is Cimahi. The Cimahi city has infants at 52. 284 (Cimahi City Health Office, 2013). Public Health Care (Puskesmas) in Cimahi that have fairly large number of infants which are Puskesmas Cipageran. In this region in January 2014 recorded 1,412 infants of 9,365 toddlers . Based on data the number of babies in January, 2014, there were 51 infants who have developmental disorders including 11 gross motoric movement, 4 fine motoric movements, 4 observations disorder , 8 problem in active speaking, 14 socialization problem (PHC Cipageran, 2014).

Growth and development in infants, is inseparable from the concept of growth and development. Various factors can affect growth and development in children. Genetic factors such as gender and race can influence the growth and development of children. In addition, postnatal environmental factors such as culture (in this case is parenting), the position of the child in the family and the child receives the stimulation effect on child development (Kristiyanasari, 2010).

Infants who experience delays in the development of a baby will make parents feel anxious and worried that influence how parents meet the needs of the baby, as the mother who did not provide exercise of their infants hands and feet regularly at certain times. Lack of stimulation given to babies will worsen developmental delays in infants. Many research shows that infants need stimulation in various parts of the body and the senses to help the infants in the adjustment to the new environment (Hurlock, 2002).

Stimulation is a stimulus that is done since the newborn (even better since in the womb) do every day, to stimulate all the system senses (hearing, seeing, touching, smelling, tasting). One of the nursing interventions that stimulate the activity of formally sports games such as swimming.

Swimming is a sport that is the best for health care because while swimming almost all the muscles of the body moves so that all muscles can be developed rapidly and the strength continues growing. Swimming is a very valuable ability to be taught since early ages. At birth, a baby's brain has little information about how to move around on the floor because the baby never had that experience. However, the baby already has information about how it feels to move in an aqueous environment. If the newborn does not use their natural abilities, may be lost. For this reason, it is vital that they have the opportunity to swim since the first days of life or as soon as possible. Provide an opportunity for the baby to move in the water is the ideal way to develop not only the body stronger but better brain. Swim from birth is very good for baby's health and development, early introduction

would avoid them experience fear of water that can develop later on in childhood. Water helps improve coordination and balance. Various research on baby swimming has been done by Sigmundsson (2009) that found an increase in the motor development after the baby swim which improves motor development as well as to keep his balance. Teaching babies to swim since the first year from the age of 3-6 months in do 2 times a week to 7 weeks can improve self-confidence, intelligence of children, improve the child's appetite and a good night's sleep (Water Babies, 2012). Furthermore, impact of the baby pool is to have a balance and beneficial for future adult life. As the result, the benefits of baby swimming quite a lot, then it is very important to have a baby swiming as one intervention stimulation of development in infants.

Sensory and motoric activity of baby much better when the baby is often invited to swim by his parents. This is because, when the baby swimming the entire muscle will move and brain would think to balance the body. Benefits also cause babies to swim more easily receive a response from the surrounding environment and easier to learn how to crawl and walk because they are accustomed to moving his hands and feet (Widodo, 2012).
Based on preliminary studies in Puskesmas Cipageran on 10 March 2014 at KIA (Health Mother and Children Room) found that mother with babies aged 1-11 months, were 11 mothers said that the baby's mother was not aware of any baby swimming and benefits. In addition, the Mother was afraid to teach swimming in babies and knows that Swimming only given to ages from 3 years and also the lack of support facilities for teaching swimming baby. The results of the initial survey found 10 infants in Puskesmas Cipageran developmental delay of soft and hard motoric with screening using Pre-Screening Questionnaire Development (KPSP). Unfortunately, the fear of parents teach babies to swim because fear of drowning, child's foot sprain, sprains, influenza and fever. Benefits of swimming can improve infant development such as gross and soft motoric development and help improve coordination and balance to train the muscles of the baby.

Method

Genetic factors such as gender and race can influence the growth and development of children. In addition, postnatal environmental factors such as culture (in this case is parenting), the position of the child in the family and the child receives the stimulation effect on child development (Kristiyanasari, 2010). Stimulation is a stimulus that is done since the newborn (even better since in the womb) do every day, to stimulate all the system senses (hearing, seeing, touching, smelling, tasting). One of the nursing interventions that stimulate the activity of sports games formally such as swimming.

Swimming is a sport that is best for health care because while swimming almost all the muscles of the body moves, Therefore, all muscles can be developed rapidly and the strength continues incrisingly. This research is a study Quasi Experimental approach to non randomized pretest-posttest design to know influence of swimming on the development of gross and soft motoric, language and social personal by comparing the baby before treated (pre) and after given treatment (post) in the group control and intervention groups.

The population in this study were infants aged 3-6 months with 363 babies in Puskesmas Cipageran Cimahi in February 2014. The sampling in this research is using purposive sample with 16 respondents to the control group and intervention. In this study, the instruments used to measure the baby's development using a measuring instrument KPSP development (Pre-Screening Questionnaire Development). The independent variables in this study is the development of the baby and the dependent variable is swimming.

Data collection techniques is to measures of infant development with pretest using sheet KPSP in Posyandu (Integrated health care for Babies) and let the baby in swimming for 15 minutes and swimming 3 times a week until week 4. Then re-measure progress using KPSP. For a control group of interventions for swimming is done after the completion of the development of post-test measurements.

Data analysis used T-Independent. Before performing the bivariate analysis, firstly researchers to test the normality of the data with the data distribution Skewness values that obtained before swiming is 0.812 / 0.637 = 1.274 and after swimming is 0.388 / 0.637 = 0.609. The result of two variables are less than 2 meaning normal distribution. As a result, It can conclude bivariate analysis using a paired test.

Results

Univariat analysis

a. characteristics of Respondents

1). Characteristics of respondents' gender

Table 1 Distribution of Respondents by Gender in Puskesmas Cipageran 2016 (n = 32)

Gender	Control Frek (%)	Intervensi Frek (%)	Total
Female	12 (75%)	10(63%)	22 (69%)

Male	4 (25%)	6 (37%)	10 (31%)
Total Amout	16 (100%)	16 (100%)	32(100%)

According to the table 1 is known that some of the respondents in the control group (75%) and the intervention group (63%) were female.

2) Outstanding characteristics Children in Families

Table 2 Distribution of respondents according to the position of children in the family health center area Cipageran 2016 (n = 32)

Position of Children	Kontrol Frek (%)	Intervensi Frek (%)	Total
First	3 (19%)	5 (31%)	8 (25%)
Second	7 (44%)	4 (25%)	11 (34%)
>3	6 (37%)	7 (44%)	13 (41%)
Total Amount	16 (100%)	16 (100%)	32 (100%)

According to the table 2 is known in the intervention group almost half of the respondents > 3 of 7 respondents (44%) to the position of children in the family, the whereas the control group almost half of the respondents is the second child of 7 respondents (44%) the position of children in the family.

3) On the development of the baby before the intervention given pool in the control group and the intervention group

Table 3 Respondents Prior Developments in Regional Health Center Cipageran In the control group and intervention group in 2016 (n = 32)

Values infant development	Group	Total	Persentase (%)
Appropriate	Control	4	25%
Question		7	44%
Possible deviations		5	31%
Appropriate	Intervension	6	37,5%
Question		6	37,5%
Possible cause		4	25%
Total Amount		32	100

Based on Table 3 is known that almost half of the respondents in the control group had developmental doubts before given intervention (pre-test) as many as seven infants (44%), while the intervention group found that almost half of respondents have appropriate development and doubted as six babies (37.5%) respectively before being given swimming intervention.

4) On the development of babies given intervention after swimming in the control group and the intervention group

Table 4 Development of Respondents after given swimming interventions in Puskesmas Cipageran for control group and intervention group in 2016 (n = 32)

Values infant development	Group	Total	Persentase (%)
Appropriate	Control	5	31%
Question		4	25%
Possible Deviations		7	44%
Appropriate	Intervension	12	75%
Question		2	12,5%
Possible cause		2	12,5%
Total amount		32	100

Based on table 4 is known that almost half of the respondents in the control group had a development possible deviations seven infants (44%) after the given intervention (Post-test), while the intervention group the majority of respondents have approprite development at 12 infants (75%) after given the intervention of swimming.

Analisa Bivariat

a. Developmental differences before and after the baby swimming given intervention in the control group and the intervention group

Table 5 Differences Developments Before and After Baby swim In the control group and intervention group in PHC Cipageran 2016

Variable	Group	Measurement	median	SD	P. Value
Development	Intervension	Before	0,625	0,281	
		After	0,937	0,472	0,002
	Control	Before	0,836	0,410	
		After	0,678	0,292	

Based on the Table 5 shows that the average value of differences in intervention group before and after the intervention has risen by 0,312 primary difference is 0.191. While the average value of the Control group differences before and after intervention decreased by 0.158 with difference of SD was 0.118. Statistical analysis showed that P value = 0.002 means that Ho refused and Ha accepted. These results suggest that there are statistically significant effect in giving a baby swim in the intervention group and the control group.

Discussion

1. Characteristics of respondents' gender and position of the child in the family

In this study, the percentage of respondents' gender in the control group, most (75%) were female and the intervention group the majority (63%) were female. The intervention group almost half of the respondents to the position of children in the family, the daughter of> 3 of 7 respondents (44%), whereas the control group almost half of the respondents to the position of children in the family that is the second child of 7 respondents (44%).Based on the observations during the study, most mothers aged late and already have at least two children.

Based on the above data, the female sex with the child's position to> 3 and the second child more likely to have developmental disorders, Judarwanto and Dwi (2012) mentions that girls at age middle childhood 5% -10% physical flexibility better than boys, but to the physical abilities such as running, jumping and throwing are included gross motoric development of boys better than girls. IDAI (2005) study found that boys at the age of 0-13 years ahead in growth because boys have appropriatehormone balance at that age, while females have a fast time in the growth at the age of 10-19 years. Besides his lack of attention, affection and his lack of oversight of the development of her baby given by parents.

In addition, research conducted by Nirvana (2011) states that the status of children in the family has an important role in the development. If the baby is the only child, the parents will tend to give 100% attention to the child. However, if the child has a lot of relatives in the family, the children will be received less attention from

parents. This is consistent with the fact that the field where the parents of the respondents said that the baby was less getting more attention because of the gap to close between the children.

2. Description of the development of the baby before the baby swim given intervention in the control group and the intervention

Giving stimulation at Posyandu Anggrek at Puskesmas Cipageran classified as less stimulation. It can be seen from the results of developmental assessment using KPSP shows the results of nearly half of the respondents in the control group 44% had doubtful development and 31% had a deviant development. In the intervention group while the results found that respondents nearly half had the appropriate development and doubtful. This is consistent with the fact of family situation, the knowledge of parents and respondents who did not support the environment. Stimulation is very important domain in shaping the development of a person, it is evident that the development based on the stimulation will be trained faster than on developments that are not based stimulation (Soedjatmiko, 2008).

Level education of parents is an important factor in the development of the child because Parents who has better education, can receive any information from the outside, especially about good parenting, how to keep their children's health, education and so forth. The numbers of children also affect the mother's ability to provide stimulation due to the experience gained in previous child. Sometimes, mothers, who have many children, already provide a good stimulation to their children but the development of children showing categories of possible deviations. In addition, family with low socio-economic and many children will result in the lack of affection and attention in children and less primary needs such as food, clothing and housing. Nursalam (2005) suggests that the pattern of child development between children is not always the same because it is influenced interactions for a number of factors for examples genetic and hormonal and environmental factors including factors prenatal, birth and postnatal period as well as the factors parents.

Research conducted that stimulation is a stimulant that comes from the outside environment. Stimulation is very important in growth and development. Infants with a lot of stimulation directed and earlier will grow faster than babies who are less or even not stimulated. Stimulation can also function as supporting for infant development. Also, attention and affection are an important stimulation in early development for example by inviting conversation, caressing, kissing, playing, and others. This is supported by Siswono (2004), early stimulation and continuously will support aspects of development such as intelligence (multiple intelligences) including logicc-mathematical, emotional, communication language (linguistic), musical intelligence, movement (kinesthetic), visualo-spatial and visual art. Stimulus that can be done for infants to enhance and stimulate its development is baby swim.

3. Overview development of the baby after the baby swim given intervention in the control group and the intervention

There are changes developments in both the control group and intervention. For the control group decreased infant development that originally the irregularities amount 5 respondents then without intervention baby swim at 7 respondens. In the intervention group before the intervention given the number of respondents who experinced doubt and distorted development is 10 respondents then decreased to 4 respondent after giving intervention; baby swim. Based on the fact, the results seen an increase in the value of developments in the intervention group initially be appropriate as much as 37.5% to 75% after baby swim. By the time, the baby that is put in the water , is crying and look fear of new things but after the routine appears to feel at ease and comfortable with the situation in the water.

This is consistent with the statement that says that newborn babies up to age 6 months can be directly invited to swim comfortably into the water without fear of drowning. Because at that age, babies have a reflex move that many potential uses for swimming. Stepping reflex is a reflex that accompanies babies as well as grasping reflex and walking reflex (Karel staa, 2012).

In accordance with the process of physiological adaptation that occurs when the pool is the stimulation given to babies mechanism nervous system receptors that work is divided into three: the first sensory input, there are receptors of somatic and visceral receptors. The second output of the motor is to get input from the brain to the spinal cord and then respond from the muscles and glands in the body. The third activity occurs integrity of electrical impulses to the brain brought up in the spinal cord and spinal nerves is brought to the cranial nerves are protected in bone cranium and vertebral canal divided into 2 of the efferent nerves to sensory and motor efferent nerves. For sensory efferent nerves, transmission of information to the central nervous, while for direct motor efferent nerves to the central nervous system and then forwarded to the muscles and glands. While the brain works is divided into two, namely the cerebellum which serves to move the muscles of the body balance and muscle functioning cerebrum great for intelligence and personality (Boyke, 2012).

In addition, the ability of the baby in the water seen that with floats, moving the hands to grab toys and move the legs that were previously the position of the baby's legs bend in the water. This is consistent with the statement by Domen (2006) states that the baby is accustomed to being in the water before the baby is born, her life began early the baby is able to float and move his legs to be able to maintain his body in the water.

4. The difference in the development of the respondents before and after the baby swim.

Statistical analysis showed the P value of 0.002 means that there is an influence on the development of swimming in the control group and intervention. The results mean in the intervention group increased, while the control group decreased. This means that the development of the respondents in the intervention group after being given baby swim progressing in accordance with the child's age. This can be due to one baby swimming techniques can easily move his whole body, especially the neck and head, which were disputed by neckring so that the baby's head freed by water and is able to strengthen the muscles so as to improve gross motoric development. Moreover, gross motor development is strongly influenced by the organs and functions of the central nervous system and brain. Central nervous system plays an important role in motor skills and coordinate every movement made by the baby. The more mature brain nerve system that regulates muscle allows development and competence or motoric abilities.

The results showed respondents prior to the baby swim was found respondents could not move his head from right / left to the middle and can not move her head from side to the other side. After swimming, there is increased development because respondents are able to perform tasks that were previously not able to progress made by the respondents including moving his head from right / left to center and from one side to the other.

This fact made possible because of the baby's head can move to stimulate the coordination of the small muscles that respondents can move his head from right / left to center. This fact reinforced the opinion Judarwanto (2012) which states that the baby swim has many benefits including increased emotional relationship between parent and baby, therefore, it can stimulate the growth of social personal and besides the movement of the head from one side to the other side serves to strengthen babies' muscles. Furthermore, it can stimulate soft motoric development.

According to Thomson (2007) says that infants aged 2 days already able to swim well. The first year of baby's life is crucial, especially in its development. By baby swim regularly participated had a big hand in supporting growth. Water allows the muscles’s baby to move freely. Other studies found that infants aged 2 months taught to swim more easily than adults, because at the ages ranging from 9 months infants already recognize the danger and fear.

Water helps improve coordination and balance. The lack of gravity means that the baby train of muscles more effective in the water than on land. A German study found that infants swim has advanced motor development, social skills and intelligence. A similar study in Finland showed that baby swim has crawl late but walking earlier after well developed muscle control.

The research found that after the infant baby swim parents say that the baby looks so calm, no fuss, slept soundly and increased intake of milk than before. This is in accordance with Judarwanto (2012) said that one of the benefits of baby swimming is to improve the bonding of children to parents, the baby relax and improve baby's appetite. In addition, it is proved in research that was launched in London in 1998. This study showed that babies sleep a lot, would be optimal brain development.Also, Research from Queeensland, Australia, revealed that the baby swim not only affects the child's physical condition but also improve the performance of a child's brain that makes it more intelligent (Schoefer Y, et al, 2007).

Conclusion

There are differences in intervention group before and after the intervention has risen by 0,312 primary difference SD 0.191. While the average value of the Control group differences before and after intervention decreased by 0.158 with SD difference 0.118. Statistical analysis showed the P value = 0.002 means that Ho refused and Ha accepted. These results suggest that there are statistically significant effect in giving a baby swim in the intervention group and the control group.

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