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ORIGINAL RESEARCH

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EFFECT OF SOLUS PER AQUA (SPA) ON INFANT WEIGHT

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ABSTRACT

Background: The prevalence of skinny infants in Indonesia is still high. Baby's Spa is considered to be able to increase infant's weight.

Objective: To determine the effectivity of baby spa in infant weight in in Bebengan Village, Boja Sub District, Kendal Regency, Central Java, Indonesia

Methods: This study was a quasy-experimental study with non-equivalent control group design. There were 38 infants were selected using purposive sampling, divided into 3 groups, namely: 1) a group received Spa 2 times per week (12 infants), 2) a group received spa 3 times per week (13 infants), and 3) a control group. Baby digital scale of ARN-EBSD-04 was used to measure infant weight. Data were analyzed using paired t-test and ANOVA.

Results: There was statistically significant effect of intervention in each group on the infant's weight. However, the data showed that the intervention that had a better effect on infant weight was the intervention of spa in two times per week with mean difference before and after intervention of 603 g.

Conclusions: Spa in 2 times per week could significantly increase infant weight effectively. Therefore, it is recommended for midwife to apply this intervention to increase the weight gain of babies and to reduce the number of skinny infants in Indonesia.

Key words: Solus per aqua, baby weight, spa

INTRODUCTION

Solus Per Aqua (Spa) is derived from the Latin phrase 'Solus per aqua' which means 'health from water'.¹ Spa means a traditional health effort with a holistic approach, in the form of comprehensive treatment using a combination of hydrotherapy skills, massage,

aromatherapy, including a food service, healthy drinks and physical activity.²

Spa in infants has 2 components, namely swimming and massage. Swimming, one type of exercises that can improve health, is a sport without the force of gravity of the earth (non weight

barring) with the risk of minor injury that because when swimming all the weight is held by water. The benefits of swimming in infant are to make baby relax, stimulate appetite, and increase diet and sleep patterns.³ Spa given to infants aged 2 - 18 months with a minimum weight of 5 Kg.⁴

Spa in this study is an intervention to reduce the prevalence of skinny infants in Indonesia, which is 12.1% in 2015 consisting of 6.8% in thin category and 5.3% in very thin category.⁵ While in the province of Central Java, the prevalence of skinny infants is 11.1% and 16% in the Kendal regency, which is considered as critical condition.⁶ Spa is considered able to help baby's immune system and alleviate digestive issues, which may increase baby's weight.⁷ Therefore, this study aimed to determine the effect of spa on infant's weight.

METHODS

Design

A quasy-experimental study with non-equivalent control group design.

Setting

The study was conducted in Bebengan village, Boja district, Kendal regency, Central Java, Indonesia, on December 12, 2016 until January 8, 2017.

Research subject

By using purposive sampling, 38 infants were selected and divided into 3 groups, namely: 1) a group received Spa 2 times per week (12 infants), 2) a group received spa 3 times per week (13 infants), and 3) a control group. The inclusion criteria to select sample were: infants aged 3-6 months, exclusive breastfeeding, normal birth weight, baby's mother had been willing to be a respondent, and domiciled in the village of Bebengan, Boja district,

Kendal regency. The exclusion criteria were babies with congenital defects.

Intervention

Implementation of Spa was done for 30 minutes consisting of 15 minutes for baby swimming and 15 minutes for baby massage. The Spa was provided at the "Agrys Baby SPA" facility, conducted by a certified health worker and an enumerator. Baby spas were given on a regular schedule and at the same time each week. In group 1, the baby's Spa was given 2 times per week on Monday and Wednesday at the same time (regular schedule). Group 2 was given Baby Spa 3 times a week on Tuesday, Thursday, and Sunday at the same time (regular schedule), and group 3 for the control group was given infant massage on Friday.

Instrument

Baby weight was measured using ARN-EBSD-04 baby digital scale, which has already been calibrated. All data collection of infant weight used the same measuring instrument by recording the display results on the scales, without classifying the size of the weight because the data taken in the form of data ratio. Data collection of infant weight in all three groups was first weighed before intervention as pretest, during intervention, and at the end of intervention as posttest.

Ethical consideration

The ethical requirements have been met by the researcher by applying Ethical Clearance to the Health Research Ethics Commission (KEPK) of Poltekkes Kemenkes Semarang, and Ethical Clearance Certificate has been issued with ethical code: 248 / KEPK / Poltekkes-Smg / EC / 2016 on December 8, 2016.

Data analysis

Dependent t-test was used to determine the mean differences before and after the intervention in each group. ANOVA was used to test the effectiveness of Solus per aqua on infant weight among the three groups.

RESULTS

Table 1 shows that there were no significant differences in age and gender among the three groups with p-value >0.05. Similar with the results of normality data test of infant weight before and after intervention showed that data on infant weight variable was in a normal data distribution among three groups with p-value 0.95 (p> 0,05).

Table 1. Frequency distribution of age and gender in infants aged 3-6 months in Bebengan village, Boja district, Kendal regency.

Group	Age (Month)		Gender		P-value
	Mean	P-value	Male	Female	
			f (%)	f (%)	
Intervention 1	4.50	0.078 ^a	6 (50)	6 (50)	0.926 ^b
Intervention 2	4.54	0.073 ^a	6 (46.2)	7 (53.8)	
Control	4.46	0.073 ^a	7 (53.8)	6 (46.2)	
Total			19 (50)	19 (50)	

^aTest of Normality with Shapiro-Wilk ^bChi-Square Test

Table 2. Infant weight before and after intervention in the Intervention group 1, 2 and control group using Paired t-test

Infant weight variable	Mean	Std. Deviation	Min	Max	P value	N
Intervention group 1						
Pretest (gram)	6647.08	888.319	5230	7920	0.0001	12
Posttest (gram)	7250.08	887.723	5780	8430		
Intervention group 2						
Pretest (gram)	6458.46	840.866	5130	7995	0.0001	13
Posttest (gram)	6964.62	879.748	5585	8460		
Control group						
Pretest (gram)	6617.69	920.429	5130	8250	0.0001	13
Posttest (gram)	7008.85	913.173	5490	8560		

The result of Paired T-test as shown in the table 2 indicated that there were statistically significant differences of

infant weight between pretest and posttest in each group with p-value 0.0001 (< 0.05).

Table 3. Difference effect of Spa on infant weight in the intervention group 1, 2 and control group using ANOVA

Group	Mean ± SD	Min – Max	Mean Square	F	P-value
Intervention 1	603 ± 124.096	505 – 910	140779.847	11.634	0.0001
Intervention 2	506.15 ± 139.585	430 – 965			
Control	391.15 ± 41.138	310 – 445			

ANOVA test shows that the mean square of infant's weight among the three group was 140779.847 with F value 11.634, and p-value was 0.0001 (<0.05), which mean that there was statistically significant effect of intervention in each group on the infant's weight. However, the data showed that the intervention that had a better effect on infant weight was the intervention 1 (two times spa per week) with mean difference before and after intervention of 603 g, which was higher compared to the intervention 2 and control group.

DISCUSSION

The aim of this study was to determine the effect of spa on infant weight. According to the findings of this study, there was a significant effect of spa on infant weight. There was an increase on weight before and after intervention among the group of given Spa two times per week, Spa three time per week, and control group. However, the group who received Spa two times a week had a higher increase of baby's weight, 603 grams compared to the other groups.

The fact of the increase of baby's weight in this study because during the intervention process the mothers said that the baby felt so much hungry and suckled strongly. This however corresponds to the theory of the body's mechanism of massage and swimming, that the pressure received by the sensory nerve fibers A β distributes the implus from the touch receptors to the central nervous system having a diameter of 5-12 μ m and a conduction velocity of 30-70 m/s.⁸ Some implus are delivered through the afferent fibers C for warm temperature receptors, which are closely related to sense of touch, furthermore it sends messages to the brain through the neural network located in the spinal cord.⁹

This stimulation activates the parasympathetic autonomic nervous system in the area of the raphe nuclei and nucleus solitarius, which are the sensory region of the medulla and the pound that enter the brain through the vagus nerves and glosovarangeus. The raphe nuclei also projects into the hypothalamus, causing the secretion of Corticotropin Releasing Factor (CFR). Furthermore, CFR stimulates the pituitary gland to increase the production of Proopioidmelanocortin (POMC) and endorphin.¹⁰ β -endorphin is a polypeptide that plays a role in increasing intake of food (oreksigenik), so that infants will consume more breastmilk to meet increased food intake requirements.⁹

Stimulated activity of the autonomic nervous system causes the response of the pancreas (Langerhans Island) to the cholinergic implus response to an increased secretion of insulin and glucagon, which serves to increase the absorption of food.¹¹ Mechanism also occurs in the gastrointestinal organs and sphincters in the noradrenergic implus response that stimulates appetite.

The finding of this study is also in line with the cohen's criteria, infants who were given baby spa for 2 times a week can have a tremendous effect on infant weight gain with an effectiveness value of 56.8%, and for infants given spa for 3 times a week can have a profound effect on infant weight gain with an effectiveness of 23.9%. This is also similar with research conducted in NICU LLRM Medical College in India in October 2009 - September 2010, revealed that premature infants who were given massage for 28 days had an increase in infant weight gain of 476.7 grams in the intervention group and 334.9 grams in the control group, so that the effectiveness value was 11.9%.¹²

CONCLUSION

According to the results of this study, it can be concluded that Spa in 2 times per week could significantly increase infant weight effectively. Therefore, it is recommended for midwife to apply this intervention to increase the weight gain of babies and to reduce the number of skinny infants in Indonesia.

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