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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 increase infant's weight.

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

Methods: This study was a quasi-experimental study with non-equivalent control group design. There were 38 infants were selected using purposive sampling, divided into three groups, namely: 1) a group received spa two times per week (12 infants), 2) a group received spa three 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: Doing spa two 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.

Keywords: 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, aroma-therapy, 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

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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 quasi-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.

Sample

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		
	Mean	p-value	Male	Female	p-value
			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)	

[a]*Test of Normality with Shapiro-Wilk* [b]*Chi-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) Posttest (gram)	 6647.08 7250.08	 888.319 887.723	 5230 5780	 7920 8430	**0.0001**	12
Intervention group 2 Pretest (gram) Posttest (gram)	 6458.46 6964.62	 840.866 879.748	 5130 5585	 7995 8460	**0.0001**	13
Control group Pretest (gram) Posttest (gram)	 6617.69 7008.85	 920.429 913.173	 5130 5490	 8250 8560	**0.0001**	13

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 Aβ distributes the impulse from the touch receptors to the central nervous system having a diameter of 5-12 μm and a conduction velocity of 30-70 m/s.[8] Some impulse 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 glosovaringeus. 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 Proopiomelanocortin (POMC) and endorphin.[10] β-endorphin is a polypeptide that plays a role in increasing intake of food (orexigenic), 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 impulse 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 nonandrogenic impulse 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.

Declaration of Conflicting Interest

None declared

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Author Contribution

All authors contributed equally in this study.

References

1. Scott J, Harrison A. *Spa: The official guide to spa therapy at levels 2 & 3*. Boston: Cengage Learning; 2006.
2. Ministry of Health of Indonesia. *Pedoman persyaratan kesehatan pelayanan sehat pakai air (SPA). Peraturan Meteri Kesehatan Republik Indonesia Nomor 1205/ Menkes/ Per/ x/ 2004 [Guideline for health requirements for healthy services using water. Regulation of Ministry of Health of Indonesia No 1205 1205/ Menkes/ Per/ x/ 2004].* Jakarta: Ministry of Health of Indonesia; 2004.
3. Roesli U. *Pedoman pijat bayi prematur dan bayi usia 0-3 bulan [Guideline of massage for pemature baby and baby aged 0-3 months].* Jakarta. Trubus Agro Wijaya; 2007.
4. Suhardjo. *Pemberian makanan pada bayi dan anak [Giving food for baby and children]*. Yogyakarta: Kanisius; 1992.
5. Minsitry of Health of Indonesia. *Health profile of Indonesia in 2013.* Jakarta: Minsitry of Health of Indonesia; 2014.
6. Minsitry of Health of Indonesia. Basic health research. Jakarta: Minsitry of Health of Indonesia; 2013.
7. Khorsandi J. Water Babies: A Texas spa is serving up a bucketful of relaxation for the tiniest of patrons. http://dujour.com/lifestyle/float-baby-hydrotherapy-infant-massage-water-therapy/. Accessed 1 March 2013.
8. Guyton AC, Hall JE. *Sensasi somatik: Buku ajar fisiologi kedokteran [Somatic sensation: Medicice physiology textbook]*. 11th ed. Jakarta: EGC; 2012.
9. Ganong WF. *Buku ajar fisiologi kedokteran [Medicice physiology textbook]*. 20th ed. Jakarta: EGC; 2002.
10. Guyton AC. *Human physiology and mechanisms of disease*. Philadelphia: WB Saunders Co; 1992.
11. Roesli U. *Pedoman pijat bayi prematur & bayi usia 0-3 bulan [[Guideline of massage for pemature baby and baby aged 0-3 months]*. Jakarta: Trubus Agriwidya; 2001.
12. Kumar J, Upadhyay A, Dwivedi AK, Gothwal S, Jaiswal V, Aggarwal S. Effect of oil massage on growth in preterm neonates less than 1800 g: A randomized control trial. *The Indian Journal of Pediatrics.* 2013;80(6):465-469.

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