

Original Research Article

The impact of baby spa on the growth and development of infants aged 3-6 months at Puskesmas I Denpasar Selatan

Noviani Ni Wayan*, Fitria

Midwifery Academy of Kartini Bali, Denpasar, Bali, Indonesia

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***Correspondence:**

Dr. Noviani Ni Wayan,

E-mail: novyfast@yahoo.com

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ABSTRACT

Background: Infancy is a critical period which required special and thorough treatment. The pursuit of optimal growth and development of infant is influenced by some factors which are correlated namely, genetics, environment, behavior, and stimulus. One of the measurements to determine growth is weight. Baby spa is one of physiotherapy for infant and could stimulate infant's motor movement which has significant influence on their growth and development.

Methods: The method of this research was Quasi experimental design using the framework of pretest and posttest with control group design on infants aged 3 until 6 months who are healthy. Kartu Menuju Sehat (KMS) or growth chart was used to record the growth of infant before and after the treatment. Denver Developmental Screening Test (DDST) was utilized to measure the infant's development before and after the treatment. Baby spa therapy was performed once every two weeks for 12 weeks.

Results: The research 20 infants of treatment group and control group statistically showed significant increase before and after baby spa treatment in term of growth and development of infants aged 3-6 months with p value=0.0000. There was an impact of the baby spa treatment towards the growth and development of infant aged 3-6 months based on the p value: 0.021.

Conclusions: Baby spa which was performed on infants aged 3-6 months significantly increases their growth and development.

Keywords: Baby spa, Development, Growth

INTRODUCTION

The prevalence of malnutrition infant was a Millennium Development Goals (MDGs) indicator which was achieved by a region (regency/city) back in 2015 where the prevalence of malnutrition infants decreased into 3.6% thus making the percentage of malnourished infants into 15.5%. In 2019, the target of SDGs is aimed to reduce the prevalence of malnourished infant into 9.5%.¹ The nutritional status problems of infant in Indonesia was quite high with the prevalence of 5.7% on the category of

malnourished and 13.9% on less-nourished category. In Bali Province, the nutritional status based on weight for certain age showed the prevalence of malnourished was 3% and quite high prevalence of less-nourished which was 10.2%. Denpasar city showed quite high prevalence of less-nourished which was 6.5%.¹ Infancy is a critical period which requires special and thorough treatment. Baby care is not enough with merely routine treatment, but it must be full of affection. The pursuit of optimal growth and development of infant is influenced by some factors which are correlated namely, genetics,

environment, behavior, and stimulus. One of the measurements to determine growth is weight.²

Weight is one of the most important anthropometric measures because it is used to examine children health in all age groups. Besides that, weight is also a simple indicator utilized in the field or Puskesmas (Public Health Center) to determine the nutritional status of children. Weight increase is influenced by food or nutrition, genetic factor, environment, health level, nutritional status and physical training. With regard to the explanation above, non-pharmacological treatment to increase infant's nutrition intake and appetite is highly needed to prevent malnutrition on infant. One of the treatments which could be introduced and safe for infants is baby spa.

Baby spa is physiotherapy for infant which could stimulate infant's motor movement. By playing with water, infant's muscles will be well-developed, joints could grow optimally, body growth will increase, and body will become supple. By swimming in water, all parts of the infant's body will be trained because all body parts are moving starting with leg, hand until head even though it is not complete. Besides that, the infant's skill to control their muscle will improve because when swimming in water, the gravitation effect is low thus making it possible for infant to move more and allow all muscles to work, optimally.³

Baby spa is a spa treatment on infant which could be performed in two different ways namely, having a bath or swimming and baby massage. Movement in the water will stimulate infant's motoric movement. Movement in the water will make all parts of infant's body trained, besides that, it will also increase infant's ability to control their muscles. Massage has a function to make infant to be more responsive, better greeting with eye contact, smiling even more, speaking more frequently, more responding, faster in learning environment and more perceptive on environment. Furthermore, explains that on the age of 4-6 months is the best time for infants to know about swimming pool. This is because of their aquatic reflect which has not been vanished yet (the ability to take a breath before touching water), infants also have the sense to float and submerge that prevent them from swallowing water while within the water.⁴

Baby spa has the similar definition with adult spa but it specifically targets on infants and utilizes simpler process. Baby spa is a series of child's growth and development stimulation which combines baby massage baby gym, baby hydro, also skin care using chocolate for children.⁵

In general, baby spa begins with massage and followed by swimming. According to the American massage therapy association, baby massage could be performed by touching, moving, and giving pressure on body. The benefits for infant are an increasing appetite which

increasing their weight as well, and also an improvement in term of weight, height and head circumference if we compare them with the infants who are in the same age on whom baby spa therapy is not performed.⁶

Baby massage is commonly called stimulus touch. Baby massage could be defined as a comfortable conversation between mother and baby.² Baby massage is also called touch therapy which refers to a technique that combines the physical benefits of human touch with emotional benefits such as mind bonding. Baby massage is one of the alternative ways to achieve the simplest health degree that could be performed at home, besides, it could incite mind bonding between child and parents.⁷

Baby gym is a movement game for infants aimed to stimulate their growth and development as well as their motoric skill which is good for maintaining their body's fitness. This type of gym is given to the infants aged more than three months or when they could lift their head firmly, this activity is highly needed by infants because infants who are more than three months old start using their hands and legs to support their body when they begin crawling.⁷

Baby gym is a practice to help the stimulation of an optimal nerve system and motoric growth and development for infants. Through baby gym, the propinquity of mother and child will be even stronger. Baby gym might be also used to notice abnormal growth of infants earlier, thus we could take appropriate precaution so that they could grow normally. Moreover, gym provide opportunity for children to learn about themselves on their own during normal development or properly based on their age. Besides, baby gym is essential to strengthen muscles and ankles of infants as the preparation for them to sit, stand up and walk. Here, baby gym is only performed based on the pattern of infant's development or age. Based on research the baby gym can train the joints muscles to accelerate blood circulation, so that babies feel comfortable and relax that can stimulate growth hormone and baby's weight can be increased.⁸

Baby swim is a baby care which is performed by swimming in warm water-swimming pool with the temperature of 38 until 40 degree Celsius or depends on the temperature of baby's body using life vest/ The function of baby swim is to train the body function of infants by soaking them in water, to stimulate their activities by moving their hand and legs for approximately 15 minutes, to safely work out their muscles, and to train their motoric system. Baby swim could be also performed on infant aged two months until one year old. The primary objective of baby swim is to stimulate infant's activities, while its functions is to increase IQ, to boost health and to stimulate motoric movement, it sharpens independence, courage and confidence, diminishing the fear of water, improving social skill and could serve as entertainment.⁹

Some related researches on the increasing weight or nutritional status of infants is the impact of baby massage on infant with low birth weight and premature baby. Infant with low birth weight ranging from 1,500-2,499 gram who are given baby massage therapy three times a day for 10 days. More research about the treatment of baby massage on infants and control group without baby massage. From those researches, the groups which acquired better increase of weight were the ones on whom massage had been performed because the massage which was done regularly on infant including massage movement on leg, stomach, breast, hand, back and stretching would cause potential nerve action which stimulates vagus nerve and later would stimulate increased intestinal peristaltic to intensify gastric emptying and digestive enzymes production so that nutrition absorption in body would be maximized. Massage on infant could accelerate blood circulation and increase cell metabolism. These researches were performed using one type of therapy. Therefore, this research would be developed by combining other types of therapy treatment which are baby gymnastic, baby swim and baby massage or sometimes referred to as baby massage.⁹

Preliminary study on 12 premature babies who received aquatic physical therapy for 10 minutes showed that the babies experienced better quality of sleep as it tends to be more relaxed and could tolerate more pain.⁴ Other preliminary study on infant aged 7-9 month in Brazil in 2013 on 12 subjects by dividing them into two, 6 for control and 6 with intervention, showed that the development of motor skill of infants who were trained to swim for 40 minutes in a week for four months was better than those who were not stimulated.¹⁰

METHODS

The research design used was quasi experimental in the framework of pretest and posttest with control group design. This research was performed in the working region of Puskesmas I Denpasar Selatan (Public Health Center I of South Denpasar) from December 2017 until March 2018. The sample for this research was infant aged 3-6 months who were healthy.

The sampling technique which was applied here was consecutive sampling. The data was collected before and after the treatment of baby spa once every two weeks for 12 weeks. Kartu Menuju Sehat (KMS) or Health Chart was used to record the infants' development before and after the treatment. Denver Developmental Screening Test (DDST) was performed to measure the development of infant. The data was analyzed by descriptive and bivariate with paired t-test.

RESULTS

During the research from December 2017 until March 2018, there was sample characteristic which were gender,

parents' education, parents' occupation, the income of parents and caretaker (s) as followed.

Table 1. Frequency distribution of respondent' characteristic in control group.

| Characteristic | Frequency (F) | Percentage (%) |
|----------------------------|---------------|----------------|
| Gender | | |
| Male | 8 | 80 |
| Female | 2 | 20 |
| Parents' education | | |
| Elementary | 1 | 10 |
| Secondary | 5 | 50 |
| High | 4 | 40 |
| Parents' occupation | | |
| Unemployed | 1 | 10 |
| Employed | 9 | 90 |
| Parents' Income | | |
| < IDR 1,800,000 | 10 | 100 |
| > IDR 1,800,000 | 0 | 0 |
| Caretaker | | |
| Only Mother or Father | 4 | 40 |
| Mother and parents-in-law | 3 | 30 |
| Previous Children | 0 | 0 |
| Babysitter | 3 | 30 |

Table 1 shows that the majority or 8 people (80%) was male including, most of the parents or 5 people (50%) had secondary education level (high school/vocational school), almost all of the respondent's parents or 9 people (90%) were employed, all respondents' parents have income more than IDR 1,800,000.00 and that most of the caretaker on control group or 4 people (40%) were mother or father only.

Table 2: Frequency distribution of respondent' characteristic in treatment group.

| Characteristic | Frequency (F) | % |
|----------------------------|---------------|-----|
| Gender | | |
| Male | 3 | 30 |
| Female | 7 | 70 |
| Parents' education | | |
| Elementary | 0 | 0 |
| Secondary | 6 | 60 |
| High | 4 | 40 |
| Parents' occupation | | |
| Unemployed | 3 | 30 |
| Employed | 7 | 70 |
| Parents' income | | |
| < IDR 1,800,000 | 1 | 100 |
| > IDR 1,800,000 | 9 | 90 |
| Caretaker | | |
| Only Mother or Father | 5 | 50 |
| Mother and parents-in-law | 5 | 50 |
| Previous children | 0 | 0 |
| Babysitter | 0 | 0 |

Table 2 shows that the majority or 7 people (70%) were female, the majority of respondent's parents or 6 people (60%) had secondary education level (High School/Vocational School), most of respondent's parents or 7 people (70%) were employed and almost all respondent's parents or 9 people (90%) had income >IDR 1,800,000 and half of the caretaker or 5 people (50%) were only father or mother while the rest (50%) were mother and parents-in-law.

Table 3: Test of normality.

| | Kolmogorov-Smirnov ^a | | |
|----------------|---------------------------------|----|--------|
| | Statistic | df | Sig. |
| Pre_treatment | 0.168 | 10 | 0.200* |
| Post_treatment | 0.310 | 10 | 0.071 |
| Pre_control | 0.202 | 10 | 0.200* |
| Post_control | 0.093 | 10 | 0.200* |

Table 3 shows that both data from treatment group and control group were distributed normally looking at the value of $p > 0.05$.

Table 4: Frequency distribution of growth (weight) and development (rough motoric, fine motoric, language, and social personal) of infant aged 3-6 months in the control group before and after treatment.

| Component | Control Group | | p Value |
|-------------------------|---------------|------|---------|
| | Pre | Post | |
| Growth | | | |
| Average (x) | 5.60 | 6.88 | 0.000 |
| Deviation Standard (DS) | 0.59 | 0.66 | |
| Development | | | |
| Average (x) | 2.20 | 2.50 | 0.279 |
| Deviation Standard (DS) | 0.42 | 0.53 | |

Table 4 shows that there was an increased average value of the growth and development in control group before and after treatment. The statistic also shows significant increase in the growth of infant aged 3-6 months before and after without baby spa treatment with the value of $p=0.0000$ meanwhile, there was no significant increase in term of development before and after treatment with the value of $p=0.279$.

Table 5 shows the increased value of average growth and development in treatment group. The statistic also shows significant increase in the growth and development of infant aged 3-6 months before and after baby spa treatment with the value of $p=0.0000$.

The result of bivariate analysis using paired t-test are on Table 6. The analysis result using paired t-test statistically showed different value between control group and treatment group looking at p value=0.021. It could be

concluded that baby spa had significant impact on the growth and development of infant aged 3-6 months in the working region of Puskesmas I Denpasar in 2017.

Table 5: Frequency distribution of growth (weight) and development (rough motoric, fine motoric, language, and social personal) of infant aged 3-6 months in the treatment group before and after treatment.

| Component | Treatment Group | | p Value |
|-------------------------|-----------------|------|---------|
| | Pre | Post | |
| Growth | | | |
| Average (x) | 5.95 | 7.99 | 0.000 |
| Deviation Standard (DS) | 0.88 | 1.38 | |
| Development | | | |
| Average (x) | 2.10 | 2.90 | 0.000 |
| Deviation Standard (DS) | 0.32 | 0.32 | |

Table 6: The impact of baby spa on the growth and development of infant aged 3-6 months in the working region of Puskesmas I Denpasar Selatan.

| Component | Control | Treatment | P <0.05 |
|--------------------|---------|-----------|---------|
| Growth | | | |
| Mean | 1.28 | 2.04 | 0.021 |
| DS | 0.65 | 0.69 | |
| Development | | | |
| Mean | 0.20 | 0.80 | 0.022 |
| DS | 0.63 | 0.42 | |

DISCUSSION

The result of this research showed different value of the growth and development between control group and treatment group looking from p value =0.021. It could be concluded that baby spa had significant impact on the growth and development of infant aged 3-6 months in the working region of Puskesmas I Denpasar in 2017.

Baby spa is physiotherapy for infant which could stimulate infant's motor movement. By playing with water, infant's muscles will be well-developed, joints could grow optimally, body growth will increase, and body will become supple. By swimming in water, all parts of the infant's body will be trained because all body parts are moving starting with leg, hand until head even though it is not complete. Besides that, the infant's skill to control their muscle will improve because when swimming in water, the gravitation effect is low thus making it possible for infant to move more and allow all muscles to work optimally.³

In general, baby spa begins with massage and later followed by swim. According to The American Massage Therapy Association, baby massage could be performed by touching, moving and giving pressure on body. The benefit for infants is it boosts their appetite thus

increasing their weight which makes infants seem healthier and builds up weight, height, and head circumference in comparison with the other same age infants who do not get baby spa therapy.⁶

Preliminary study on 12 premature babies who received aquatic physical therapy for 10 minutes showed that the babies experienced better quality of sleep as it tends to be more relaxed and could tolerate more pain.⁵ Other preliminary study on infant aged 7-9 month in Brazil in 2013 on 12 subjects by dividing them into two, 6 for control and 6 with intervention, showed that the development of motor skill of infants who were trained to swim for 40 minutes in a week for four months was better than those who were not stimulated.¹⁰

Respondents in this research were female teenagers who had not married because pregnant women usually have an allergy which is related to nerves that cause decreased adrenaline as well as extending cervix thus inducing menstrual pain sensation. Based on the explanation above, the researcher argued that the growth and development of infants in the first three months of their life is crucial. The first three months of infant's lifetime is very critical which will affect their development in their golden age if it is not stimulated. Baby spa is one of the therapies which could increase the stimulation of growth and development of infant since early age. From the result of the researcher's observation, the treatment of baby spa in the infant aged 3-6 months gave optimal result. This was shown from the increase of weight and the infant's motor development.

CONCLUSION

Baby spa significantly impacted the growth and development of infant aged 3-6 months with the value of $p=0.021$. This research on baby spa could be continued by extending the time for this research and shortening the gap of baby spa into once a week.

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REFERENCES

1. Bappenas. The presidential regulation of the Republic of Indonesia Number 5 of 2010 concerning national medium-term development plan 2010-2014. Jakarta. 2015:508-9.
2. Subakti Y, Anggraini D. Miracle Baby and Toddler Massage. Jakarta: PT Wahyu Media. 2008:25-7.
3. Yahya N. Baby and Child Spa. Solo: Dipl. CIBTAC. 2011:45-9.
4. Riksani R. Easy and Safe Baby Massage. Jakarta: Niaga Swadaya. 2012:40-3.
5. Roesli U. Guideline for Premature Baby Massage. 10th ed. Jakarta: Trubus Agriwidya. 2008:20-1.
6. Aditya N. Handbook for New Mom. Yogyakarta: Stiletto Book. 2014:44-45.
7. Pratyahara. Miracle of touch therapy for your baby. Yogyakarta: Javalitera. 2012:56-8.
8. Maharani S. Massage and gymnastics for babies. Yogyakarta: Kata Hati. 2009:24-5.
9. Widodo A. Effectiveness of baby spa towards baby sleep's duration on 3-4 months old, 2012. Available at: <https://publikasiilmiah.ums.ac.id/bitstream/handle/11617/3316/12.%20AGUS%20WIDODO.pdf;sequence=1>. Accessed 28 November 2014.
10. Dias JA, Manoel Ede J, Dias RB, Okazaki VH. Pilot study on infant swimming classes and early motor development. *Percept Mot Skills.* 2013 Dec;117(3):950-5.

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