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Tummy time to improve psychomotor development Babies 6-9 months

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ABSTRACT

The practice of tummy time has been included in various guidelines for baby care but is still not widely known by Indonesian people. The purpose of this study was to determine the effect of giving tummy time on the psychomotor development of infants aged 6-9 months in the Working Area of the Membey Health Center. The research utilized a pre-experimental design known as the one-group pretest-posttest design. The population of this study was all infants aged 6-9 months, with a purposive sampling technique and a sample size of 32 respondents. Measurement of motor development was carried out using developmental pre-screening questionnaires, while tummy time was recorded in diaries, observation sheets, and interviews. The results of the research data were tested using the analysis Wilcoxon Signed Ranks Test. Most of the psychomotor development before giving tummy time in infants aged 6-9 months was found to be more doubtful (78.1%), after giving tummy time the results increased to conform with several of 20 respondents (62.5%). Tummy time has been shown to affect increasing psychomotor development in infants aged 6-9 months with a Z count of -4.231 with a p-value = <0.0001. Tummy time promotes motor development and offers practical recommendations.

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INTRODUCTION

The attainment of psychomotor milestones during early childhood signifies the growth and maturation of the central nervous system and is impacted by various factors, including the innate characteristics of the infant, the surrounding environment, and external stimuli (E Gajewska, 2021; Morea, 2020). During the initial stages of an infant's life, prompt recognition of developmental delays enables the implementation of effective interventions, taking advantage of their heightened brain plasticity (Carson V, 2022; Pedersen MRL, 2022; Shimpei Yamamoto, 2020).

One way to prevent developmental delays in newborns is to provide adequate stimulation to babies with tummy time, which is assisted and supervised by parents or family (Boutot AE, 2018; Reed I, 2021). Tummy time or prone position is a form of physical activity that is recommended for babies aged less than 6 to 9 months (Hewitt L, 2020, 2022; Zhang Z, 2023).

Placing the body in a prone position alleviates pressure on the back of the head, stimulates the muscles in the core, enhances the strength of the muscles in the trunk and neck extensors, and improves mobility in the thoracic and scapular regions (Smith AEM, 2020). In addition to increasing muscle development, the tummy time is also positively related to mental and social skills and allows babies to visually explore their environment (Boutot AE, 2018; Hewitt L, 2022; Zhang Z, 2023).

Tummy time is a widely recommended activity included in most infant health guidelines due to its association with favorable long-term outcomes, such as decreased television viewing, increased engagement in active play, and reduced risk of childhood obesity. It is advised to initiate daily tummy time practice from birth, starting with two to three sessions lasting three to five minutes each, and gradually increasing the duration to at least 30 minutes per day until the age of six months, with constant supervision (Morea, 2020; Palmer CF, 2019).

The results of a preliminary study examining psychomotor development in 10 babies aged 6-9 months found that 6 babies (60%) had dubious developmental results, 3 babies (30%) were by following with the developmental stages and 1 baby (10%) had the possibility of having deviations, in follow-up interviews it was found that mothers of babies often leave their babies in a supine position, and provide less stimulation to help develop psychomotor abilities in babies, and mothers of babies do not know what is called tummy time and most of the mothers say they are afraid to give their babies a prone position.

From the results of the problem analysis at the Posyandu PuskesmasMembey, then the purpose of this study was to determine the effect of givingTummy Time on psychomotor development in infants aged 6–9 months in the Working Area of the Membey Health Center, Arfak Mountains District.

RESEARCH METHOD

The design in this study uses pre-experimental using methode one group pretest-posttest design. This research was conducted in the Work Area of the Membey Health Center, Arfak Mountains District, West Papua Province, and was carried out in December 2022. The population in this study were all infants aged 6-9 months in the Working Area of the Membey Health Center. The sampling technique used in this study uses nonprobability sampling with technique purposive sampling, with a total sample of 32 respondents.

The instruments used to measure the implementation of Tummy Time are tummy time diaries, observation sheets, and interviews, while to measure psychomotor abilities to use developmental pre-screening questionnaires for ages 6 months and 9 months, with the materials provided are foam mattresses, red wool balls, pencil, peanuts and a 500 rupiah coin, stuffed toy rabbit, 2 wooden cubes measuring 2.5 x 2.5 cm.

The implementation of data collection began with psychomotor measurements of infants aged 6-9 months, then continued with teaching mothers to do tummy time for babies. After the mother can carry out tummy time independently, the mother is asked to carry out tummy time regularly every day with a duration of between 10-30 minutes each day which is recorded in the tummy time diary and will be recapitulated in the weekly observation sheet that will be carried out by the researcher. Tummy time activities are carried out every day for 1 month. After one month of tummy time, an examination will be carried out from psychomotor back using the developmental pre-screening questionnaires sheet.

The data analysis technique used in this study was univariate analysis and bivariate analysis using the Wilcoxon test because the results of the normality test found that the psychomotor data of infants aged 6-9 months were not normally distributed so it needed to be transformed so that the data could be analyzed.

RESULTS AND DISCUSSIONS

Univariate analysis

Data on infant characteristics and results of measurements of psychomotor development before and after being given Tummy Time are shown in Table 1.

Table 1. General characteristics and results of the infant's psychomotor examination

Data	Amount	Percentage (%)
Baby age (months)		
6	8	25,0
7	7	21,9
8	7	21,9
9	10	31,2
Gender		
Female	15	46,9
Male	17	53,1
Tummy time duration (minutes)		
10-15	10	31,3
16-20	9	28,1
21-25	8	25,0
26-30	5	15,6
Psychomotor Before Tummy Time stimulation		
In accordance	6	18,8
Doubtful	25	78,8
deviate	1	3,1
Psychomotor After being given Tummy Time		
In accordance	20	62,5
Doubtful	12	37,5

The description of the characteristics of the respondents is in Table 1. Shows that the age of most respondents is 9 months (31.2%), more than half are male (53.1%), the average duration of doing Tummy Time in a day the most is 10-15 minutes (31.3%), psychomotor development before being given Tummy Time is the biggest doubtful (78.8%), whereas after being given Tummy Time the most is appropriate (62.5%).

Bivariate Analysis

Table 2. Results of the analysis of the effect of giving Tummy Time on psychomotor development in infants aged 6-9 months

Ranks		N	Mean Rank	Sum of Ranks	WITH	Asymp. Sig
Psychomotor development before and after being given Tummy Time	Negative Ranks	0[a]	,00	,00	-4,231	0,001
	Positive Ranks	22[b]	11,50	253,00		
	Ties	10[c]				
	Total	32				

Based on the results of Table 2. It shows that no one experienced a decrease in psychomotor development, 10 respondents experienced a steady development before giving Tummy Time, and 22 respondents experienced an increase in the development of psychomotor values. The results of the analysis using the Wilcoxon test showed that the Z value is -4.231 > Z table -1.645 with a value of p = <0.0001 <α, so it can be concluded that there is an effect of giving Tummy Time on psychomotor development in infants aged 6-9 months in the Work Area Membey Community Health Center, Arfak Mountains District, West Papua Province.

Psychomotor development before being given Tummy Time

Based on the results of the study it was found that most of the crawling abilities of babies before giving tummy time with doubtful development were as many as 25 babies (78.1%). According to a developmental system view, psychomotor development cannot be understood separately from several contexts, namely the body, environment, and social/cultural where the behavior occurs (Koren A, 2019). The body and environment develop simultaneously. New or improved psychomotor skills bring new experiences from the environment into play and thereby provide a better ability to learn and do new things (SS Santos Sampaio, 2023). Parenting styles by the mother or family can facilitate or even limit psychomotor development. As a result, differences in the way parents interact with their babies influence the form of new skills acquired at a given age, and the shape of their developmental trajectory (Smith AEM, 2020; Uzark, 2022).

Emerging psychomotor development can result from a combination of interacting factors, including some that are so ingrained in our environment that we tend to overlook them, as well as others that are subtle and easily go unnoticed, causing us to miss the connections between them (Shimpei Yamamoto, 2020). Changes in development within a specific domain can trigger a ripple effect, influencing developments in other domains, even extending to areas far removed from the initial accomplishment (Morea, 2020). Furthermore, the environment in which behavior unfolds can vary significantly for each child, leading to developmental trajectories that occasionally converge toward similar outcomes and at times diverge in distinct directions (Carson V, 2022).

It is important to provide appropriate and safe stimulation for babies to develop their psychomotor abilities. Providing opportunities to play and explore in a protected environment, providing toys that are suitable for use, and providing positive social interactions can stimulate the psychomotor development of infants. But it must always be remembered that every baby develops at a different pace, so there is no need to compare them with other babies' development, but you still have to be aware of delays or irregularities.

Psychomotor development after being given Tummy Time

Based on the results of the study it was found that most of the babies' crawling abilities after giving tummy time with appropriate development were 20 babies (62.5%). Tummy time has an important role in the psychomotor development of infants. However, if babies are not given tummy time, this can affect some aspects of their psychomotor development. Tummy time helps strengthen your baby's core, neck, arms, and legs (Williams E, 2023). Without sufficient exercise in the prone position, babies may experience delays in developing the strength and control of these muscles. This can affect their ability to lift their heads, roll over, sit, and crawl (Silva BSV, 2023; Smith AEM, 2020; Zachry, 2022).

Tummy time helps babies in developing their body balance and coordination. In the tummy position, babies learn to control their heads, move their arms, and legs, and shift their bodies. Without this opportunity, babies may experience delays in developing the balance and coordination skills needed for their motor development (Hewitt L, 2020, 2022).

Tummy time provides an opportunity for babies to experience new sensations in their hands and feet as they touch different surfaces. Without tummy time, babies may experience limited sensory exploration, which can affect the development of perception sensory them.

The effect of giving Tummy Time on the psychomotor development of infants aged 6-9 months

Based on the results of bivariate analysis using the Wilcoxon test, it shows that the Z value is -4.231 with a value p= <0.0001, it can be concluded that there is an effect of giving Tummy Time on psychomotor development in infants aged 6-9 months. In recent years, it has been reported that activity in the prone position called "Tummy Time" is important for the development and shape of the baby's head (Hewitt L, 2020; Morea, 2020; Zhang Z, 2023).

Tummy time refers to the practice of placing a baby on their stomach while they are awake and under supervision, offering them a chance to enhance and promote their motor development.

Moreover, accumulating evidence suggests that implementing tummy time early on can be beneficial in mitigating motor delays among infants with Down syndrome (Boutot AE, 2018).

In this study, the duration of tummy time, which varies greatly, certainly has a different effect on the psychomotor development of infants. In Zhang's study (2023) regarding the characteristics and dose-response of giving tummy time to development in infants, it was shown that infants who were given tummy time with an average time of 30-44 minutes for 2 consecutive months had a higher developmental score than infants who do not get tummy time (Zhang Z, 2023).

Several factors can affect the provision of tummy time to infants aged 6-9 months, including the awareness of parents about the importance of tummy time in infant motor development (IT Felzer-Kim, 2020; R Tinius, 2020). If parents are not aware of the benefits, they may not be giving tummy time regularly or not giving their baby enough time to be in the tummy position (EH Kim, 2020). The baby's health can also affect tummy time (Dumuids-Vernet MV, 2022). If your baby has certain health problems, such as breathing problems, certain diseases, or neurological disorders, it may be necessary to consult with the doctor before starting or continuing tummy time (Ko J, 2023). Some babies may not feel comfortable in the prone position. They may feel tired, put too much pressure on their stomach, or don't like changing positions (Tremblay, 2020). Parents need to pay attention to their baby's comfort signals and start tummy time for a short duration, then gradually increase the time according to the baby's comfort (Koren A, 2019; Morea, 2020).

It is important to create a safe environment when giving tummy time. Ensure a hard, flat surface, such as a clean floor and a suitable mat, and avoid high or dangerous places. Always supervise the baby during tummy time to prevent the risk of choking or injury (Hesketh KR, 2022). Making tummy time a part of the daily routine can help improve consistency and ensure that your baby gets enough tummy time. Integrating tummy time with other activities, such as after changing diapers or before bed, can make it a regular habit (Jie Feng, 2021). Getting support from a partner, family, or friends can also influence tummy time. Social support can be in the form of understanding and knowledge about the benefits, as well as encouraging and assisting parents in consistently implementing tummy time (Palmer CF, 2019; Smith AEM, 2020; Uzark, 2022).

CONCLUSION

Tummy time has a good effect on increasing psychomotor development in infants 6-9 months. Tummy time stimulation that is done regularly and safely gives babies a better chance of developing. This good practice in tummy time stimulation and stimulation can be continued by baby mothers and their families, and it is possible to apply it to younger babies by adjusting the duration and ensuring that the mother or parents know the proper technique for implementing tummy time for their baby.

The findings presented in this paper can serve as a valuable resource for parents, caregivers, and healthcare professionals, enabling them to make informed decisions and implement appropriate interventions to support infants' optimal growth and development.

There are some limitations in this research. First, the number of participants is limited. Second, is the mother's honesty in filling out the daily tummy time activity sheet, so that the accuracy of the tummy time duration data might be doubted. To maintain accurate and up-to-date research data, schedule regular meetings with the mother to review the daily records and provide feedback. This will motivate the mother to remain consistent in recording information and help address any issues or confusion that may arise. Future research can address these limitations, explore individual differences, consider specific populations, and investigate the long-term effects of tummy time.

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