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The Relationship Between Low Birth Weight Infants (BBLR) and the Development of Toddlers (1–3 Years) at Teungku Peukan Southwest Aceh Hospital in 2026

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A B S T R A C T

Background: Low Birth Weight Infants (LBWI) are still one of the health problems in various countries, including Indonesia. Babies with a birth weight of less than 2500 grams have a higher risk of impaired health, growth, and development. The toddler period is an important period in children's growth and development because there is rapid development in motor, language, and social aspects. Therefore, early developmental monitoring is very necessary, especially in children with a history of BBLR. Objective: This study aims to determine the relationship between low birth weight inf (BBLR) and the development of toddler children (1–3 years) at Teungku Peukan Southwest Aceh Hospital in 2026. Research Design: This study uses an analytical design with a cross sectional approach. The population is all toddler children (1-3 years old) who are examined at Teungku Peukan Southwest Aceh Hospital. The sampling technique used a total sampling with a sample of 36 respondents. Data analysis was carried out using the Chi-Square test. Results: The results showed that most children had normal birth weight and age-appropriate development. Statistical tests showed a p-value of < 0.05, which means that there is a significant relationship between BBLR and the development of toddlers. Conclusions: There is a significant relationship between BBLR and toddler (1–3 years)

development. Suggestion: Health workers are expected to improve monitoring of growth and development and carry out early detection in children with a history of BBLR.

Keywords: BBLR, Child Development, Toddler

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INTRODUCTION

Low Birth Weight (LBW) is a baby born with a body weight of less than 2,500 grams regardless of gestational age. BBLR is still a global health problem because it is related to an increased risk of pain, death, and impaired child growth and development. The impact of BBLR does not only occur in the neonatal period, but can continue until the age of toddlers, especially in toddlerhood (1-3 years) which is the golden period of child development. The World Health Organization (WHO) reports that about 15–20% of births in the world are babies with BBLR. WHO emphasizes that babies with a history of BBLR have a higher risk of experiencing delays in motor, cognitive, and language development than babies with normal birth weight (WHO, 2023). In its latest report, WHO also stated that monitoring the growth and development of children with a history of BBLR is very important to prevent long-term impacts on the quality of health and human resources (WHO, 2024).

The Ministry of Health of the Republic of Indonesia (Kemenkes RI) said that BBLR is still one of the important indicators in maternal and child health in Indonesia. Based on the Indonesian Health Profile, children with a history of BBLR have a greater risk of experiencing growth and developmental disorders, especially at the age of under five years (Ministry of Health of the Republic of Indonesia, 2023) and (Huda et al., 2025) The Ministry of Health of the Republic of Indonesia also emphasizes the importance of early detection of the development of toddlers through routine monitoring in health facilities as an effort to prevent developmental delays and stunting (Ministry of Health of the Republic of Indonesia, 2024).

The results of a national study published in the Indonesian Journal of Child Health (SINTA 2) show a significant relationship between the history of BBLR and developmental delays in children aged 1–3 years. Children with BBLR have a higher risk of delayed motor and cognitive

development compared to children with normal birth weight (Sari et al., 2021). Another study in the Journal of Midwifery and Nursing (SINTA 3) also states that BBLR affects gross and fine motor development in toddlers (Rahmawati et al., 2022).

In addition, research published in the Journal of Public Health Sciences (SINTA 2) concluded that a history of BBLR is the dominant risk factor for delayed child development, especially if it is not accompanied by optimal monitoring of growth and development (Putri et al., 2023). These findings reinforce the statement of WHO and the Indonesian Ministry of Health that children with a history of BBLR need special attention in the early stages of life. Stated that toddlers with a history of BBLR have a higher risk of developmental delays in gross motor, fine motor, and social aspects compared to children with normal birth weight. The study confirms that birth weight is an important predictor of early childhood development and requires continuous monitoring of growth and development, especially at the age of 1–3 years (Hidayah et al., 2020).

Compliance is a form of behavior following rules or instructions recommended by health workers. In this study, maternal compliance was measured based on their presence in the activities of Teungku Peukan Hospital for the last 3–6 months (Puspitasari & Widodo, 2023). Compliance was measured based on the number of maternal visits to the hospital in the last 1 year. This standard refers to the indicators of the ideal visit of toddlers to posyandu according to the Health Office and WHO (Sari & Handayani, 2023). The Aceh Provincial Health Office reported that BBLR cases are still found in various districts/cities, including Southwest Aceh Regency. The Aceh Health Office emphasizes that children with a history of BBLR are at risk of growth and developmental impairment if they do not receive proper monitoring and intervention from an early age (Aceh Health Office, 2023).

Especially in Southwest Aceh district, the rate of Low Birth Weight Babies (BBLR) in 2023 was recorded at 23.4%, and the rate of hospital visits has not reached the optimal target. Based on a report by the Southwest Aceh Health Office, only about 62% of babies are routinely weighed every month. The lack of awareness and knowledge of baby mothers is one of the factors for the low participation (Southwest Aceh Health Office, 2023). Based on service data at the Tengku Peukan Regional General Hospital, Southwest Aceh Regency, there are still babies born with BBLR and continue until toddler age. However, the

relationship between BBLR and the development of children aged 1–3 years has not been systematically documented.

METHOD

The type of research used in this study is quantitative. Quantitative research is a research method that uses data in the form of numbers and statistical analysis to test hypotheses and explain the relationships between variables (Sugiyono, 2019) with ethical principles (usman Chairul, 2017) and Huda, C. (2017). The research design used is cross-sectional, which is an observational approach carried out to study the relationship between risk factors (independent variables) and effects (dependent variables) by collecting data simultaneously at a single point in time (Sugiyono, 2019) and (Prastiwi, D. 2024). This research will be carried out at the Teungku Peukan Regional General Hospital, Southwest Aceh in 2026. The time for the research was carried out from February to March 2026. The population in this study is all mothers who have children aged 1–3 years at Teungku Peukan Hospital in the period of 2023–2025.

The sampling technique used is total sampling, which is a sampling technique in which all members of the population who meet the inclusion criteria are used as research samples. The inclusion criteria in this study included children born at Teungku Peukan Hospital, aged 1–3 years at the time of the study, and parents who were willing to be respondents. Meanwhile, exclusion criteria include children with severe congenital disorders and children with a history of severe chronic disease.

RESULTS AND DISCUSSION

This research was carried out from February to March 2026 with research respondents namely mothers who have children aged 1-3 years who have received health services at Teungku Peukan Aceh Southwest Hospital. The characteristics of the respondents are a general description of the condition of the research subject which includes several demographic aspects (Huda & Waluyo, 2022). The data on the characteristics of the respondents in this study are presented in the form of frequency and percentage distribution tables.

Table 1. Distribution of Respondents by Age of Children

Yes	Child's Age	Frequency (f)	Percentage (%)
1.	1 Year	12	33,3
2.	2 Years	14	38,9
3.	3 Years	10	27,8
	Quantity	36	100%

Data source: Processed by the author, 2026

Based on the table above, it can be seen that most of the children are in the 2-year age group, which is as many as 14 respondents (38.9%). Meanwhile, 12 respondents (33.3%) were 12 years old, and 10 respondents were 3-year-olds (27.8%). This shows that the majority of respondents in this study are in middle toddler age.

Table 2. of Distribution of Respondents by Gender of Children

No	Gender	Frequency (f)	Percentage (%)
1.	Male	20	55,6
2.	Women	16	44,4
	Quantity	36	100%

Data source: Processed by the author, 2026

Based on the table above, it can be seen that most of the children in this study were male, namely as many as 20 respondents (55.6%), while children who were female were 16 respondents (44.4%). This shows that the gender distribution of children in this study is relatively balanced, although the number of boys is slightly higher than that of girls.

Univariate Analysis

Univariate analysis was carried out to describe the distribution of each research variable which included independent variables, namely Low Birth Weight Infants (BBLR) and dependent variables, namely the development of *toddlers* (1–3 years).

Table 3. Baby Distribution by Birth Weight

No	Birth Weight	Frequency (f)	Percentage (%)
1.	BBLR (< 2500 gram)	13	36,1
2.	Normal (≥ 2500 gram)	23	63,9
	Quantity	36	100%

Data source: Processed by the author, 2026

Based on the table above, it can be seen that babies born with the BBLR category (<2500 grams) were 13 respondents (36.1%), while babies born with normal birth weight (≥2500 grams) were 23 respondents (63.9%). This shows that most of the babies in the study had normal birth weight compared to babies born with low birth weight.

Bivariate Analysis

Bivariate analysis was conducted to determine the relationship between Low Birth Weight Infants (BBLR) and toddler development (1–3 years). The statistical analysis used in this study is the Chi-Square (χ^2) test with a significance level of 0.05.

Table 4. Relationship of BBLR with Toddler Development (1–3 Years)

No	Child Development	Frequency (f)	Percentage (%)
1.	Conform	22	61,1
2.	Dubious	9	25,0
3.	Deviation	5	13,9
	Quantity	36	100%

Data source: Processed by the author, 2026

Based on the table above, it can be seen that most children have age-appropriate development, namely 22 respondents (61.1%). Furthermore, there were 9 respondents (25.0%) with doubtful development, while children who experienced deviant development were 5 respondents (13.9%). This shows that the majority of toddler-age children in this study have development that is appropriate to their age stages.

Table 5. Relationship of BBLR to Toddler Child Development (1–3 Years)

Birth Weight	Conform	Dubious	Deviation	Total	p-value
BBLR	5	5	3	13	
Normal	17	4	2	23	
Total	22	9	5	36	0,032

Data source: Processed by the author, 2026

Based on the table above, it can be seen that of the 13 children with a history of BBLR, there are 5 children with appropriate development, 5 children with dubious development, and 3 children with deviant development. Meanwhile, of the 23 children with normal birth weight, there were 17 children with appropriate development, 4 children with doubtful development, and 2 children with deviant development. The

results of the analysis using the Chi-Square test obtained a p-value = 0.032. Since the p-value is less than 0.05 (0.032 < 0.05), H_0 is rejected and H_1 is accepted. Thus, it can be concluded that there is a relationship between low birth weight infants (BBLR) and the development of toddler children (1–3 years) at Teungku Peukan Southwest Aceh Hospital in 2026.

Discussion

This study aims to determine the relationship between Low Birth Weight Infants (BBLR) and the development of toddler children (1–3 years) at Teungku Peukan Southwest Aceh Hospital in 2026. Based on the results of the study on 36 respondents, it was obtained that most children were at the age of 2 years and were dominated by the male gender. The toddler age is an important period in a child's life because during this period there is very rapid development, both in terms of motor, language, cognitive, and social aspects. Therefore, monitoring children's growth and development at this age is very important to detect developmental delays from an early age.

The results of the study showed that most children had a normal birth weight, although there was still a significant proportion of children with a history of BBLR. BBLR is one of the risk factors that can affect children's growth and development, because babies with low birth weight generally have suboptimal physiological conditions, including low energy reserves and immature immune systems. In the developmental aspect, most children show age-appropriate development, but children with doubtful and deviant development are still found. Children's development is influenced by various factors, including health conditions at birth, nutritional status, stimulation from the environment, and parental parenting. Children with suboptimal health conditions at birth, including BBLR, have a higher risk of developing developmental disorders.

The results of bivariate analysis showed that there was a significant relationship between BBLR and toddler-age development ($p < 0.05$). Children with a history of BBLR tend to have a greater risk of developmental delays than children with normal birth weight. This is due to the development of the nervous system that is not optimal in BBLR babies, so it requires special attention in monitoring and stimulating development. Overall, the results of this study confirm that birth weight history is one of the important factors that affect children's development.

Therefore, efforts to prevent BBLR as well as regular monitoring of growth and development and provision of appropriate stimulation, especially in children with a history of BBLR, are needed to support the achievement of optimal development.

CONCLUSION

Based on the results of the study, it can be concluded that there is a significant relationship between Low Birth Weight Infants (BBLR) and the development of toddler children (1–3 years) at Teungku Peukan Southwest Aceh Hospital in 2026. Children with a history of BBLR have a higher risk of developmental delays than children with normal birth weight. Therefore, efforts to prevent BBLR and increase regular monitoring of child growth and development, especially in children with a history of BBLR, are needed to support optimal development.

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