

Association between pregnancy history, exclusive breastfeeding, and immunisation with stunting status in Dukuhmaja Village, Brebes

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ABSTRACT

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Background: Stunting is one of the global problems that can increase morbidity, mortality, poor development, and infections in children. Some risk factors that escalate stunting incidence are pregnant women, insufficient breastmilk, infection, and the environment.

Objective: This study aims to determine the association between pregnancy history, exclusive breastfeeding, and immunisation status with stunting incidence.

Methods: This observational study employed a case-control design. The independent variables were pregnancy history, exclusive breastfeeding, and immunisation status. Meanwhile, the dependent variable was stunting incidence. The study subjects were 40 respondents, consisting of 20 respondents diagnosed with stunting and 20 respondents of control.

Results: This study revealed an association between a history of low birth weight ($p=0.028$), too early provision of complementary food in addition to breast milk ($p=0.011$), no antenatal care (ANC) examination ($p=0.000$), and exclusive breastfeeding ($p=0.028$). However, these factors are not significantly different from the immunisation status ($p=0.548$).

Conclusion: This study concluded an association between pregnancy history and exclusive breastfeeding with stunting.

Latar Belakang: Stunting merupakan salah satu masalah global yang dapat meningkatkan morbiditas, mortalitas, perkembangan yang buruk, dan infeksi pada anak. Beberapa faktor risiko yang meningkatkan kejadian stunting adalah ibu hamil, air susu ibu (ASI) tidak mencukupi, infeksi, dan lingkungan.

Tujuan: Penelitian ini bertujuan untuk mengetahui hubungan riwayat kehamilan, pemberian ASI eksklusif, dan status imunisasi dengan kejadian stunting.

Metode: Penelitian observasional ini menggunakan desain kasus-kontrol. Variabel bebas penelitian ini adalah riwayat kehamilan, ASI eksklusif, dan status imunisasi. Sedangkan variabel terikatnya adalah kejadian stunting. Sampel penelitian ini sebanyak 40 responden, terdiri dari 20 responden terdiagnosa stunting dan 20 responden kontrol.

Hasil: Penelitian ini mengungkapkan adanya hubungan antara riwayat berat badan lahir rendah ($p=0,028$), pemberian makanan pendamping ASI terlalu dini ($p=0,011$), tidak dilakukan pemeriksaan antenatal care (ANC) ($p=0,000$), pemberian ASI eksklusif ($p=0,028$). Namun, faktor-faktor tersebut tidak berbeda nyata dengan status imunisasi ($p=0,548$).

Kesimpulan: Penelitian ini menyimpulkan bahwa ada hubungan antara riwayat kehamilan dan pemberian ASI eksklusif dengan stunting.

INTRODUCTION

Malnutrition is one of the current global

problems and is one of the risk factors causing high rates of illness, death, infection, and

stunting in children under 2 years.¹ Stunting is one of the malnutrition diseases suffered by 161 million children.² The prevalence of stunting in Indonesia is 37%, which has increased from the previous year.³ Therefore, this high number has made stunting the main target of Global Nutrition in 2025.

Various risk factors can increase children's risk of stunting. These factors include home and family conditions, inadequate nutrition, exclusive breastfeeding, infection, and the environment.⁴ Home and family conditions comprise poor nutrition during pregnancy, age at the pregnancy, and premature birth. Nutritional deficiencies include low vitamin intake, low energy food, and low animal food intake.⁵

Age during pregnancy is one of the indirect risk factors for stunting. Pregnant mothers under 20 years old are not mentally ready to care for their babies, such as giving exclusive breastfeeding; this condition causes stress on the mothers.⁶ A study shows that too young or too old age of pregnancy affects the incidence of stunting.⁷ The height of pregnant women who are less than 145 cm is also a maternal risk factor and will increase the risk of stunting.⁸ Mothers should exclusively breastfeed their babies when they are less than 6 months. Not providing exclusive breastfeeding will increase the risk factors for stunting because breast milk contains nutrients that help baby development.⁹ A previous study demonstrated that not giving exclusive breastfeeding increased 2.451% of the incidence of stunting.¹⁰

Primary immunisation history is a risk factor for stunting. Primary immunisation is an effort to prevent viral and bacterial infections that can interfere with the growth and development of children.¹¹ World Health Organisation (WHO) framework includes enteric infection, respiratory infection, and inflammation. Available literature reported that infectious diseases were associated with stunting.³ We hypothesise that children who do not receive primary immunisation are more likely to be stunted. Vaccine program effectiveness depends

on individuals' proportion covered by the immunisation schedule and on the family's ignorance about the vaccinations and the schedule so that children are not vaccinated.¹²

The high incidence of stunting has triggered this study to identify various risk factors, such as maternal, nutritional, and environmental factors. Since each region has different risk factors, this study aims to determine the association between pregnancy history, exclusive breastfeeding, and immunisation with the incidence of stunting in Dukuhmaja Village, Brebes.

METHODS

This observational study employed a case-control design. This study was conducted in Dukuhmaja Village, Brebes, and involved 40 respondents who met the inclusion and exclusion criteria. The inclusion criteria were (1) children aged 24-48 months, (2) outpatients in Jatirokeh Public Health Centres, Brebes, and (3) patients who willingly participated in this study. The exclusion criteria were (1) child outpatients with a congenital abnormality, (2) congenital heart diseases, and (3) short stature from a short parent or sibling.

The data were collected by distributing the questionnaires and examining the healthy card book of the respondents. The questionnaire contained risk factors for stunting, such as immunisation status, exclusive breastfeeding, and pregnancy history, which included height at delivery, age at delivery, administration of blood tablets, birth weight, antenatal care (ANC), infection during pregnancy, and complementary food in addition to breast milk. The data were analysed through bivariate analysis using Chi-Square to determine the odd ratio values. Then, the multivariate analysis of the logistic regression test was also conducted.

RESULTS

This study involved 40 respondents, consisting of 19 male respondents (47.5%) and 21 female respondents (52.5%). The respondents' average body weight is 11.61 kg.

Table 2 shows the results according to the Chi-Square test. The result shows that the absence of standard ANC is a significant ($p=0.000$) risk factor for stunting. Meanwhile, the provision of complementary food for breast milk before 6 months demonstrated a significant result ($p=0.011$) and reduced the risk factor of stunting

by 1.7 times. Moreover, Table 2 shows that the absence of exclusive breastfeeding and birth weight of <2500 g significantly ($p=0.028$) affect the incidence of stunting and have a 6-time greater risk factor.

Table 3 shows that the regression test has obtained that the birth weight <2500 gram,

Table 1. Demographic Data of Respondents

Demographic Data		N (%)
Gender	Male	19 (47.5%)
	Female	21 (52.5%)
Age	24-30 months	12 (30%)
	31-40 months	7 (17.5%)
	41-48 months	21 (52.5%)
Body height	71-80 cm	5 (12.5%)
	81-90 cm	19 (47.5%)
	91-100 cm	13 (32.5%)
	> 100 cm	3 (7.5%)
Body weight	8-10 kg	11 (27.5%)
	11-15 kg	29 (72.5%)

Table 2. Risk Factors for Stunting

Risk factors	Yes (%)	No (%)	p-value	OR (95% CI)
Age at birth <20 years	2 (5%)	38 (95%)	0.147	0.630 (CI 0.093-4.244)
TB <145 cm	5 (12.5%)	35 (87.5%)	0.633	1.000 (CI 0.059-17.065)
Premature birth	1 (2.5%)	39 (97.5%)	0.311	0.317 (CI 0.113-0.889)
Birth weight <2500 grams	10 (25%)	30 (75%)	0.028	6.000 (CI 1.082-33.274)
Exclusive breastfeeding	10 (25%)	30 (75%)	0.028	6.000 (CI 1.082-33.274)
Complementary food for breast milk <6 months	18 (45%)	22 (55%)	0.011	0.179 (CI 0.046-0.704)
Incomplete immunisation	3 (7.5%)	37 (92.5%)	0.548	0.474 (CI 0.039-5.688)
ANC	21 (52.5%)	19 (47.5%)	0.000	171.00 (CI 14.241-2053.249)
Taking blood boost	10 (25%)	30 (75%)	0.147	2.429 (CI 0.512-11.511)
Infection during pregnancy	40 (100%)	0 (0%)	0.465	0.302 (CI 0.029-3.152)

Table 3. Regression Test

Risk factors	R-squared	p-value
Birth weight <2500 gram		0.610
Exclusive breastfeeding		0.127
Complementary food for breast milk <6 months	0.783	0.009*
ANC		0.000*

* $p<0.05$

the absence of exclusive breastfeeding, complementary food for breast milk <6 months, and the absence of standard ANC can affect the incidence of stunting by 78.3%. Moreover, the regression test has discovered that the risk factors that mostly affect stunting are the provision of complementary food for breast milk <6 months and the absence of ANC with a p-value of <0.05.

DISCUSSION

This study revealed that factors increasing stunting incidence are birth weight <2500 g, the absence of exclusive breastfeeding, early provision of complementary food for breast milk, and the absence of routine ANC. Birth weight becomes one of the dominant predictors of children with stunting and is frequently associated with the number of families, income, and children in a family.^{13,14} Moreover, birth weight occurs due to impaired growth from early childhood to adulthood. Newborns with low birth weights are 3.12 times as susceptible to stunting as newborns with normal birth weights. Some influencing factors of stunting are gender, parents' knowledge and employment, and social-economy status.¹⁴ The social-economy status is associated with nutrient intake, such as supplements and foods that contain vitamins.¹⁵ Moreover, poor nutrition during pregnancy will reduce the transport of vitamins through the placenta to the foetus.¹⁶ A previous study reported that low birth weight influences the incidence of stunting through poor-early growth, especially in the first year.¹⁷

The absence of exclusive breastfeeding is another risk factor for stunting. A previous study reported that exclusive breastfeeding affects the incidence of stunting.¹⁸ This study has discovered that only 25% of the respondents give exclusive breastfeeding, and only 37% of Indonesians give exclusive breastfeeding.¹⁹ Several factors cause the low number of exclusive breastfeeding. First, breast milk production is not much or insufficient. Second, a breast pump is not available in workplaces. Fourth, mothers are

busy. Fifth, children always cry. Many mothers give breast milk only at 2-3 months and continue the program by giving milk formulas and porridges.¹⁰ Children not exclusively breastfed will experience nutritional deficiencies and can suffer from some diseases, such as diarrhoea.²⁰ Exclusive breastfeeding is pivotal because breast milk contains nutrients, such as fat and vitamins, and affects children's height and weight.²¹

ANC is one of the health facilities to control pregnancy by providing nutrition for pregnant women and educating them and their families.²² The current study demonstrated the association between ANC and stunting.¹⁴ The ANC enables pregnant women to get information about their health during pregnancy and know the health status of their foetuses. The obtained information is very helpful for health workers to provide services and prevent bad conditions in foetuses.²³ One of the reasons pregnant women do not attend ANC is the lack of awareness to visit health facilities; as a result, early detection of medical history during pregnancy is not optimal.²⁴ Other factors that influence pregnant women not taking the ANC are insufficient support from husbands or family and doubts about the certainty of pregnancy.²⁵

This study found that immunisation status has no association with stunting.²⁶ This finding demonstrated that children who are not fully immunised do not necessarily suffer from a disease because there are other influential factors, such as hygiene.²⁶ However, children with low hygiene can also suffer from a disease.²⁷ This study proved that high immunisation rates in children indicate the parents' good awareness. Immunisation improves immunity and prevents stunting in children.¹¹

CONCLUSION

This study concludes that the absence of exclusive breastfeeding, too early provision of complementary food for breast milk, low birth weight, and the absence of ANC are risk factors for stunting.

CONFLICT OF INTEREST

The authors have no conflict of interest.

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