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The Relationship between Risk Factors and Stunting Incidence in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat* on September 2019

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***Abstract*:**
This study is about the relationship between risk factors and stunting incidence. It was done to determine the relationship between risk factors and the incidence of stunting. It was done in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat* on September 2019. This study used a cross-sectional analytic design. Data is taken directly (primary data) using interviews. The study population were 120 people. The research sample 120 persons (Total Sampling). Data collection was carried out by using questionnaires. The result of the study are: a) the age of children under five with the most stunting is 25 - 36 months, as many as 32 people with the largest gender were women, as many as 25 people; b) the risk factors for pre-conception associated with the incidence of stunting were the age of the pregnant women (p value < 0.05); c) the risk factors for post conception associated with the incidence of stunting were low birth weight (p value < 0.05); d) The socioeconomic and environmental risk factors associated with stunting are exposure to cigarette smoke (p value < 0.05) and family income (p value < 0.05), but not the mother's education level (p value > 0.05); and e) exposure to cigarette smoke (OR 18.23, p = 0.00), maternal age at pregnancy (OR 20.88, p = 0.00) and family income (OR 28.9, p = 0.00) were predicted to be the most critical risk factors for stunting (p < 0.25). It is concluded that there is a relationship between risk factors and stunting incidence.
Keywords: *Risk Factor, Stunting Incidence, Environmental Risk, Family Income.*

1. INTRODUCTION

Stunting is a growth and development disorder experienced by children with poor nutrition, repeated infections, and inadequate psychosocial stimulation [1]. In 2018, three regions had a very high incidence of stunting, with a rate of about one-third of children experiencing it. The area is southern Asia, including Indonesia, eastern and southern Africa, and west and central Africa. On the other hand, there are four areas with low stunting rates. These areas are Eastern Europe and Central Asia, Latin America and the Caribbean, East Asia and the Pacific, and North America [2]. In Indonesia, around 37% (nearly 9 million) children under five are stunted. Indonesia is a country with the fifth-largest prevalence of stunting worldwide [3]. In 2013, it was recorded that the majority of children with stunting in Sumedang was around 41.08%. 37,970 children are stunted. This figure is quite a lot when compared to other districts in West Java, such as Bogor (28.29%), Indramayu (36.12%), Karawang (34.87%), Sukabumi (37.1%), and Garut (37.83%) [4]. Children with stunting indicate that they have failed to grow and develop fully. Stunting is basically irreversible, which means the child will have

little hope of reaching its full potential. This condition is costly, has an impact on poverty, and slows down economic growth [5].

Stunting has a significant impact on children's growth and development, as well as Indonesia's economy in the future. The effects of stunting on children's health and development are very detrimental. Stunting can cause developmental problems in children, especially in children under two years of age. Children who are stunted generally experience obstacles in cognitive and motor development which will affect productivity as adults. Besides, stunted children also have a greater risk of suffering from non-communicable diseases such as diabetes, obesity and heart disease as adults. Economically, the problem of stunting will undoubtedly be a burden for the country, mainly due to increased health financing and the potential for enormous economic losses [6]. It is essential to know the risk factors for stunting itself. The results of previous studies indicate that the risk factors for stunting can be divided into three, namely, pre-conception, post-conception, and environmental, social factors. The high prevalence of stunting in Indonesia is related to the future of the Indonesian nation. Various studies have been conducted to identify risk factors for stunting. Thus, the problem of this study is "What is the relationship between risk factors and the incidence of stunting in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat* on September 2019?" The purpose of this study was to determine the relationship between risk factors and the incidence of stunting in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat* on September 2019.

2. LITERATURE REVIEW

Stunting is a growth and development disorder experienced by children with poor nutrition, recurrent infections, and inadequate psychosocial stimulation. Children were defined as stunting if their height for age was more than two standard deviations below the median WHO Child Growth Standards. Stunting is a condition of failure to thrive in children under five years of age as a result of chronic malnutrition so that the child is too short for his age. Malnutrition occurs since the baby is in the womb and in the early days after the baby is born, however, the condition of stunting only appears after the baby is 2 years old. Short (stunted) and very short (severely stunted) toddlers are toddlers with body length or height according to age compared to the WHO-MGRS (Multicentre Growth Reference Study) standard in 2006 [6]. The incidence of malnutrition is still very worrying. The stunting rate decreased too slowly, but the impact was too much on children. Nearly half of all deaths in children under 5 years result from malnutrition. Lack of nutrition puts children at greater risk of death from infectious diseases. The frequency and severity are increasing, but post-infection recovery is slow [7]. The interaction between malnutrition and infection can potentially create a lethal cycle that can aggravate the disease and worsen nutritional status. Malnutrition, in the first 1000 days of a child's life can also lead to stunting. This condition can affect cognitive abilities and reduce performance in school and work [7].

The measure of child malnutrition is used to track developmental progress. In the Post-2015 Development Era, estimates of child malnutrition will help determine whether the world is on the right track to achieve the Sustainable Development Goals, in particular, to end hunger, achieve food security and increase nutrition,

and promote sustainable agriculture [7]. The incidence of stunting (short) children is a major nutritional problem facing Indonesia. Based on Nutritional Status Monitoring (PSG) data for the last three years, stunting has the highest prevalence compared to other dietary issues such as malnutrition, underweight and obesity. The majority of short children under five has increased from 2016, namely 27.5% to 29.6% in 2017 [6]. The prevalence of stunting under five in Indonesia tends to be static. The results of the Basic Health Research (Riskesdas) in 2007 showed the prevalence of stunting under five in Indonesia was 36.8%. In 2010, there was a slight decrease to 35.6%. However, the prevalence of stunting increased again in 2013, namely to 37.2%. The prevalence of short children under five will then be obtained from the results of Riskesdas 2018, which is also a measure of the programs pursued by the government [6]. Stunting is caused by multi-dimensional factors and not only due to poor nutrition experienced by pregnant women and children under five. The most decisive intervention to reduce prevalence is the first 1,000 days of life (HPK) of children under five. Some of the factors causing stunting are as follows: a) Poor parenting practices; b) Limited Health Services; c) Lack of access to nutritious food to households/families; and d) Lack of access to clean water and sanitation [8]. Assessing the nutritional status of children can use height and age, which are converted into a Z-Score (threshold). According to the decree of the minister of health of the Republic of Indonesia number 1995/MENKES/SK/XII/2010 concerning anthropometric standards for assessing the nutritional status of children [10]. Based on the Z-Score value of each of these indicators, the nutritional status of infants is determined as follows [10].

Table 1 Z-Score Value

Indicator	Nutritional Status	Z-Score
Height/A or Length/A of Children aged 0-60 months	Very short	< -3,0 SD
	Short	-3,0 SD s/d < -2,0 SD
	Normal	-2,0 SD s/d -2,0 SD
	High	>2,0 SD

According to WHO, the diagnosis of stunting is carried out using Multinominal Logistic Regression, which is to make a correlation between height and age using a standard determined by WHO (Height-to-Age Z-score / HAZ). Children are declared stunted if the results of Standard Deviation (SD) which is the WHO benchmark are ≤-2 SD based on the Z-Score. However, if the result is ≤-3SD based on the Z-score, the child is classified as "severe stunting" [12]. Several institutions diagnose stunting using the Multinominal Logistic Regression using another measure, the percentile. However, today the percentile is used less frequently and more often than not, the Z-score is used, which is the most commonly used measure today [13].

Table 2 Assessment of Percentiles and Z-scores

Z - Score	Exact Percentile	Rounded Percentile
0	50	50
-1	15.9	15
-2	2.3	3
-3	0.1	1

1	84.1	85
2	97.7	97
3	99.9	99

Table 3 WHO Z-Score Classification

Z Score (percentile)	Length/height for age	Weight for age	BMI for age
>3 (99)	May be abnormal	May be abnormal (Use BMI)	Overweight
>2 (97)	Normal	Use BMI	Risk of overweight
>1 (85)	Normal	Use BMI	Normal
0 (50)	Normal	Use BMI	Normal
<-1 (15)	Normal	Normal	Wasted
<-2 (3)	Stunted	Underweight	Severe wasted
<-3 (1)	Severely Stunted	Severely underweight	

Referring to the graph released by WHO, a person has declared stunted based on measurements using an index measuring body length for age or height for age against a threshold (z-score), which is assessed with standard deviations or percentiles, where SD is less than -2SD or below the 3rd percentile, and in the very short category (severe stunting) if the z-score is less than -3SD [2 4]. The effects of stunting can be divided into short-term and long-term impacts. Short Term Impact: a) Increased incidence of morbidity and mortality; b) The cognitive, motor and verbal development in children are not optimal; c) Increased health costs. Meanwhile, Long Term Impact: a) Posture is not optimal as an adult (shorter than most); b) Increased risk of obesity and other diseases; c) Decreased reproductive health; d) Less optimal learning capacity and performance during the school period; and e) Productivity and work capacity are not optimal.

Relationship between risk factors for parity and incidence of stunting - Results of research conducted by Manggala AK, et al. in 2018 with the title "Risk Factor of Stunting in Children Aged 24 - 59 Months" shows that there is no relationship between parity and the incidence of stunting (p-value = 0.308, OR = 1.79) [16]. Supported by research conducted by Mzumara B et al. in 2018 in Zambia with the title "Factors associated with stunting among children below five years of age in Zambia: evidence from the 2014 Zambia demographic and health survey. There was no relationship between the number of children under 5 years and the incidence of stunting (OR = 1) [17]. The lack of correlation between the two is also supported by other studies [18; 19].

The Relationship between Maternal Age Risk Factors at Pregnancy and the Incidence of Stunting-A study with the case-control method conducted by Fajrina N in 2016 with the title "The Relationship between Maternal Factors and Stunting Incidence in Toddlers at Piyungan Health Center, Bantul Regency." showed that maternal age at pregnancy has a relationship with the incidence of stunting (p-value = 0.034, OR = 4.08). The reason is that at the age of < 20 years, the

reproductive organs are not functioning correctly [23]. A multicentre study conducted by Yu SH, et al. in 2016 with the title "Differential effects of young maternal age on child growth" shows that low maternal age has an effect on children's height from 0 to 11 months of age. Worse growth continued after 24 months of age. With a cross-sectional study design, involving the first child born to mothers aged 15-24 years from 18 countries. The results of this study indicated that there was a significant relationship between height/age and maternal age at pregnancy ($p < 0.10$). For children < 12 months, three out of seven Asian countries showed a significant relationship between low height and / age and low maternal age, as did six out of nine African countries. The relationship between these two variables continued after 24 months in 12 out of 18 countries in Africa, Asia, and Latin America [24].

Relationship of Risk Factors for Low Birth Weight and Incidence of Stunting - Research conducted by Rahman MS, et al. in 2016 with the title "Association of Low-Birth Weight with Malnutrition in Children under Five Years in Bangladesh: Do Mother's Education, Socio-Economic Status, and Birth Interval Matter?" demonstrated that the prevalence of malnutrition is higher in children born with low birth weight than those born at an average weight (stunting: 51% vs 39%; undernourished: 25% vs 14% and overweight: 52% vs 33 %) [25]. Low birth weight is caused by insufficient nutritional intake, both before and during pregnancy, especially in developing countries. Clinical trials have shown that improving the quality of food during pregnancy can effectively reduce low birth weight, but this is difficult to realize due to economic problems [26].

Relationship of Risk Factors for Early Breastfeeding Initiation and Incidence of Stunting - Research conducted by Nasrul et al. in 2015 with the title "Risk Factors for Stunting Ages 6-23 Months in Bontoramba District, Jeneponto Regency" showed that there was no relationship between early initiation of breastfeeding and the incidence of stunting (p-value = 0.405) [19]. In contrast to research conducted by Muldiasman et al. in 2018. The study entitled "Can early initiation to breastfeeding prevent stunting in 6–59 months old children?" showed an association without early initiation of breastfeeding with the incidence of stunting (p-value = 0.00, OR = 1.5) [27].

Relationship between risk factors for exclusive breastfeeding and the incidence of stunting - Research conducted by Manggala AK, et al. in 2018 with the title "Risk factors of stunting in children aged 24-59 months" showed that there was a relationship if not exclusively breastfed with the incidence of stunting (p-value = 0.005, OR = 6.56) [16]. This relationship is also supported by research conducted by Mzumara B, et al. in 2018 in Zambia with the title "Factors associated with stunting among children below five years of age in Zambia: evidence from the 2014 Zambia demographic and health survey". The result of this study showed association between breastfeeding for 6 months and the incidence of stunting (p-value < 0.001) [17].

The relationship between Parents' Education Level and Stunting - Results of research conducted by Manggala AK, et al. In 2018 with the title "Risk Factor of Stunting in Children Aged 24 - 59 Months", it shows that the low level of parental education is a risk factor for children with stunting in Gianyar Regency, Bali. This

research method is cross-sectional. Involving 166 children, collected consecutively, from the ages of 24 - 59 months, who visited *posyandu* at 13 *Puskesmas* in Gianyar Regency, Bali. The results obtained were from 166 study subjects, 37 (22.3%) of whom were stunted. Multivariate analysis showed that low parental education (AOR 2.88; 95% CI 1.10 to 7.55; P = 0.031) was a risk factor for stunting [16].

The Relationship between Parents' Income Level Risk Factors and Stunting Incidence - Research conducted by Setiawan E, et al., in 2018 with the title "Factors Associated with the Incidence of Stunting in Children Aged 24-59 Months in the Work Area of *Puskesmas* Andalas, East Padang District, Padang City in the year 2018 "shows that the level of parental income is also a risk factor for the incidence of stunting (p-value = 0.018, OR = 5.6) [18]. The relationship between the two is also supported by the results of other studies [22]. Relationship History of Exposure to Cigarette Smoke with Stunting Incidence A case-control study conducted by Lestari KDS et al. in 2015 with the title "Cigarette Smoke Exposure to Pregnant Women in Household Against the Increased Risk of Low Birth Weight Infants in Gianya Regency" states that a history of exposure to cigarette smoke in pregnant women can increase the risk of low birth weight (p-value < 0.001). Sources of exposure to secondhand smoke came from husbands (OR = 6.37) and family members who live in one house (OR = 6.57) [3].

3. METHOD

This study used a cross-sectional analytic design. Data is taken directly (primary data) using interviews. The research was conducted in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat*, which took place from 22 July 2019 to 28 September 2019. The study population was all infants in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat* on September 2019, totalling 120 people. The research sample was all infants in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat* on September 2019 with the same sample size as the population (Total Sampling). Data collection was carried out by using questionnaires distributed to respondent mothers, and secondary data obtained from the book Maternal and Child Health for stunting. The analysis technique used in this study was the univariate test, bivariate analysis, and multivariate analysis.

4. RESULTS AND DISCUSSION

This research was conducted on a sample of mothers who had children under five with stunting and children with stunting on September 2019 in Cilembu village, Sumedang Regency, West Java with 120 respondents.

Table 4 Distribution Based on the Age of Under-Five in *Desa Cilembu*

	Toddler Age						Total
	25-36 Month		37-48 Month		49-60 Month		
	Frequency	%	Frequency	%	Frequency	%	

Stunting	Yes	32	64%	18	36%	0	0%	50
	No	37	52%	23	32%	10	14%	70
Total		69	-	41	-	10	-	120

Based on the table 4 above, it was found that the highest number of children under five was in the age range 25 - 36 months, 32 under five with stunting (64%) and 37 under five who were not stunted (52%).

Table 5 Distribution Based on Gender in *Desa Cilembu*

		Gender				Total
		Male		Female		
		Frequency	%	Frequency	%	
Stunting	Yes	25	50%	25	50%	50
	No	33	47%	37	52%	70
Total		58	-	62	-	120

Based on the table 5 above, the sexes of both men and women are the same. 25 children under five are stunted (50%). For children under five who were not stunted, there were 33 males (47%) and 37 females (52%).

Table 6 Distribution Based on Parity in *Desa Cilembu*

		Parity				Total
		≤2		>2		
Stunting		Frequency	%	Frequency	%	
	Yes	33	66%	17	34%	50
	No	55	78%	15	21%	70
Total		88		32		120

Based on the table 6 above, it is found that 33 families (66%) who have children with stunting have parity ≤ 2 and 17 families (34%) who have children with stunting have parity > 2. Meanwhile, as many as 55 families (78%) had children under five who were not stunted with parity ≤ 2 and 15 families (21%) had children who were not stunted having parity > 2.

Table 7 Distribution Based on Maternal Age at Pregnancy in *Desa Cilembu*

		Maternal age at pregnancy				**Total**
		Risky		Ideal		
		Frequency	%	Frequency	%	
Stunting	Yes	47	94%	3	6%	50
	No	30	43%	40	57%	70
Total		77		43		120

Based on the table 7 above, it is found that 47 respondents who have children with stunting have a risky age during pregnancy (94%) and as many as 3 respondents who have an ideal age at pregnancy (6%).

Table 8 Distribution Based on Birth Weight in *Desa Cilembu*

		Birth Weight				Total
		< 2500 gr		≥ 2500 gr		
		Frequency	%	Frequency	%	
Stunting	Yes	41	82%	9	18%	50
	No	6	8%	64	91%	70
Total		47		73		120

From the table 8 above, 41 stunted children were born with birth weight < 2500 grams (41%), while as many as 9 children with stunting were born with birth weight ≥ 2500 grams (9%).

Table 9 Distribution Based on Early Breastfeeding Initiation in *Desa Cilembu*

		Early Initiation of Breastfeeding				Total
		No		Yes		
		Frequency	%	Frequency	%	
Stunting	No	7	14%	43	86%	50
	Yes	0	0%	70	100%	70
Total		7		113		120

Based on the table 9 above, it was found that as many as 7 mothers who had toddlers with stunting imposed early initiation of breastfeeding (14%), while as many as 43 mothers who had children with stunting did not apply early initiation of breastfeeding (86%).

Table 10 Distribution Based on Exclusive Breastfeeding in *Desa Cilembu*

		Exclusive Breastfeeding				Total
		No		Yes		
		Frequency	%	Frequency	%	
Stunting	Yes	10	20%	40	80%	50
	No	0	0%	70	100%	70
Total		10		110		120

Based on the table 10 above, it was found that 10 mothers who had children under five with stunting and did not provide exclusive breastfeeding (20%), while 40 mothers who had children with stunting gave exclusive breastfeeding (80%).

Table 11 Distribution Based on Basic Immunization in *Desa Cilembu*

	Basic Immunization				Total
	Incomplete		Complete		
	Frequency	%	Frequency	%	

Stunting	Yes	2	4%	48	96%	50
	No	0	0%	70	100%	70
Total		2		118		120

Based on the table 11 above, it is found that as many as 2 children under five with stunting did not get complete primary immunization (4%), while as many as 48 children with stunting who received full necessary vaccination (96%).

Table 12 Distribution based on Mother's Education Level in *Desa Cilembu*

		Mother's Education				**Total**
		Uneducated		Educated		
		Frequency	%	Frequency	%	
Stunting	Yes	35	70%	15	30%	50
	No	52	74%	18	36%	70
Total		87		33		120

Based on the table 12 above, it is found that as many as 35 mothers who have children with stunting have a low level of education (70%) and as many as 15 mothers who have children with stunting have a high level of education (30%).

Table 13 Distribution Based on Family Income in *Desa Cilembu*

		Family Income				Total
		< District minimum wage		≥ District minimum wage		
		Frequency	%	Frequency	%	
Stunting	Yes	50	100%	0	0%	50
	No	28	40%	42	60%	70
Total		78		42		120

Based on the table 13 above, it is found that as many as 50 families who have children under five with stunting have a family income below the UMK (100%), while no families who have children with stunting have an income above the same as the district minimum wage.

Table 14 Distribution Based on Cigarette Exposure in *Desa Cilembu*

		Cigarette Exposure				**Total**
		Yes		No		
		Frequency	%	Frequency	%	
Stunting	Yes	39	78%	11	22%	50
	No	6	8%	64	91%	70
Total		45		75		120

Based on the table above, it was found that as many as 39 mothers who had toddlers with stunting admitted that they were quite frequently exposed to cigarette smoke. Either while pregnant, or when the child is born (78%). Meanwhile, as many as 11 mothers who had children with stunting admitted that they had no history of exposure to cigarette smoke (22%).

Bivariate analysis used the chi square test followed by logistic regression to obtain associations between independent variables and the incidence of stunting. Table 4.2.1 shows the results of the chi square-test between the independent variables and the incidence of stunting.

Table 15 Stunting Relationship with Risk Factors

Variable	Nutritional status		OR	95%CI	P-Value
	Stunting	Not Stunting			
Family income			1		0.399
< District minimum wage	50	28			
≥ District minimum wage	0	42			
Parity					
≤ 2	33	55	0.529	- 1.453 – 0.182	0.125
>2	17	55			
Exclusive breastfeeding					
No	10	0	1		0.00
Yes	40	70			
Early Initiation of Breastfeeding					
No	7	0	1		0.001
Yes	43	70			
Maternal age at pregnancy					
Risky	47	30	20.88	1.780 – 4.229	0.00
Ideal	3	40			
Cigarette exposure					
No	6	64	37.8	12.953 – 110.413	0.00
Yes	39	11			
Birth weight					
< 2500 gr	41	9	48.593	2.779 – 4.988	0.036
≥2500 gr	6	64			
Basic immunization					
No	2	0	1		0.092
Yes	48	70			
Mother's last education					
Low education	35	52	0.808	- 1.022 – 0.595	0.604
Higher education	15	18			

Based on table 15, it can be seen that the risk factors that have a relationship with stunting are birth weight, history of cigarette smoke exposure, maternal age at pregnancy, early breastfeeding incision, exclusive breastfeeding, and family income because it has a p-value < 0.05 from the results of the chi-square test.

Multivariate analysis used logistic regression. Logistic regression was carried out after the risk factors that were not related to pregnancy were excluded because they had a p value > 0.05. Risk factors that were not associated were parity, necessary immunization, and mother's education level. Logistic regression results can be seen in table 16

Table 16 Logistic Regression Results

Step	P
Step 1	0.74
Step 2	0.99
Step 3	0.97

The results from table 16 show that the history of exposure to cigarette smoke, maternal age at pregnancy, and family opinion is the most dominant risk factors in causing the incidence of stunting. Calibration is the level of correspondence between probability estimates from 1 model or real probability equations based on a numerical perspective. Equation calibration can be assessed by the p-value obtained from the Hosmer and Lemeshow Test, where p value> 0.05 is a sign of good calibration. For this study, the results obtained from the Hosmer and Lemeshow test were 0.97. An interpretation can be drawn that there is no difference between the observed and expected values.

Table 17 Hosmer and Lemeshow Test Results

Variable	Adjusted OR (AOR)	P-Value
Birth weight	0.49	0.56 (> 0.25)
Cigarette exposure	0.05	0.00 (< 0.25)
Maternal age at pregnancy	0.05	0.00 (< 0.25)
Early initiation of breastfeeding	0.00	0.99 (> 0.25)
Exclusive breastfeeding	0.00	0.99 (> 0.25)
Family income	0.00	0.00 (<0.25)

Based on the results of this study, it is found that risk factors have a correlation with the incidence of stunting. The characteristics are obtained in pre-conception, post-conception, socioeconomics, and environment. The results of the chi-square test show that the pre-conception factor is the mother's age at pregnancy, the post-conception factor is low birth weight, early initiation of breastfeeding, and exclusive breastfeeding, and for the socioeconomic and environmental aspects in the history of cigarette smoke exposure and family income level (p-value 0.05). In this study, there was no correlation between the incidence of stunting and parity, initiation of basic breastfeeding, basic immunization, and the level of mother's education. These independent variables which are known to be unrelated will not be included in the logistic regression test. From the results of this study, it was found that of all existing risk factors, the risk factors most likely to cause stunting

in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat* were history of exposure to cigarette smoke, level of family income, and maternal age at pregnancy.

When compared with the results of previous studies that also used logistic regression, there are differences regarding the most dominant risk factors in causing the incidence of stunting. The first study conducted with the title "Risk factors of stunting in children aged 24-59 months" showed that the most likely risk factors for the occurrence of stunting were the low level of maternal education, maternal height less than 150 cm, maternal age at pregnancy, body weight low birth, and short birth length. This research was conducted in Gianyar Regency, Bali [16]. The second study was conducted with the title "Factors associated with stunting among children below five years of age in Zambia: evidence from the 2014 Zambia demographic and health survey". The results of this study indicate that the risk factors that most determine the incidence of stunting are the age and sex of the child, the mother's age at pregnancy, the mother's education level, wealth status, clean drinking water sources, breastfeeding duration, and elevation [17]. From this study, the same risk factors were maternal age at pregnancy and wealth status or family income level every month.

The third study is different from the results of this study. Conducted with the title "Factors Associated with the Incidence of Stunting in Children Aged 24-59 Months in the Work Area of the *Puskesmas Andalas*, East Padang District, Padang City in 2018". The most dominant risk factor is the mother's education level. This is different from the results of this study. The fourth study was conducted with the title "Stunting Risk Factors Ranging from 6-23 Months Old in Bontoramba District of Jeneponto Regency". From the results of this study, it was found that the most dominant risk factors were low birth weight, maternal height, caregivers who did not wash their hands, and basic immunization. There were no similar risk factors in the results of this study. The fifth research conducted with the title "Predictors of Stunting among School-Age Children in Northwestern Ethiopia". It was found that completeness of basic immunization, parity, level of mother's education, and suitability of feeding to children were the most dominant risk factors in causing the incidence of stunting. No risk factors were the same in the results of this study.

The sixth study conducted by Oktarina Z and Sudiarti T with the title "Risk Factors for Stunting in Toddlers (24 - 59 Months) in Sumatra" shows that the single most dominant risk factor in causing the incidence of stunting is the number of household members or parity. There are no risk factors that match the results of this study. The seventh research conducted with the title "Risk factors for the incidence of stunting in children aged 6-36 months in the Rural Area of *Silat Hulu District, Kapuas Hulu, Kalimantan Barat*." It shows that the most determinant risk factors in causing the incidence of stunting are the level of family income, the height of the father, the height of the mother, and exclusive breastfeeding. The same risk factor as the results of this study is the level of family income. The eighth study conducted with the title "Factors Affecting the Incidence of Stunting in Children under Five in Rural and Urban Areas" is the level of adequacy in giving zinc. There are no results that match the results of comparative studies with the results of this study. When compared with the results of this study with the results of other studies, each place has different dominant risk factors in causing

stunting in Cilembu Village, the most predominant risk factors in causing stunting are the age of the mother during pregnancy, the level of family income, and a history of exposure to cigarette smoke. Not the same in other areas.

5. CONCLUSIONS

Based on the results of the research "the relationship between risk factors and stunting incidence in *Desa Cilembu Kecamatan Pamulihan, Kabupaten Sumedang Provinsi Jawa Barat* on September 2019" which was carried out on 120 samples, the following conclusions were obtained: a) Based on demographic data, the age of children under five with the most stunting is 25 - 36 months, as many as 32 people with the largest gender were women, as many as 25 people; b) The risk factors for pre-conception associated with the incidence of stunting were the age of the pregnant women (p value < 0.05), but not the total parity (p value > 0.05); c) The risk factors for post conception associated with the incidence of stunting were low birth weight (p value < 0.05), early initiation of breastfeeding (p value < 0.05), exclusive breastfeeding (p value < 0.05), but not basic immunization (value p> 0.05); d) The socioeconomic and environmental risk factors associated with stunting are exposure to cigarette smoke (p value < 0.05) and family income (p value < 0.05), but not the mother's education level (p value > 0.05); and e) exposure to cigarette smoke (OR 18.23, p = 0.00), maternal age at pregnancy (OR 20.88, p = 0.00) and family income (OR 28.9, p = 0.00) were predicted to be the most critical risk factors for stunting (p < 0.25).

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