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Letter of Acceptance for Abstract

Dear Authors: Heru Subaris Kasjono1)*, Agus Wijanarko1), Rizki Amelia1), Dina Fadillah1), Wahyu Wijanarko1), Sutaryono2)

We are pleased to inform you that your abstract (ABS-89, Oral Presentation), entitled:

"Impact of Early Marriage on Childhood Stunting"

has been reviewed and accepted to be presented at ICoSHEET 2019 conference to be held on 18-19 December 2019 in Semarang, Indonesia.

Please submit your full paper and make the payment for registration fee before the deadlines, visit our website for more information.

Thank You.

Best regards,

Dr. Mujiarto, S.T.,M.T.
ICoSHEET 2019 Chairperson

Impact of Early Marriage on Childhood Stunting

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Abstract

Pregnancy requires increased iron needs, while pregnant women who are still in their teens also need iron for growth. This results in teenage pregnancy having an impact on the risk of stunting in children born. The purpose of this study is to prove the relationship between early marriage and the risk of stunting in children. The design of this study was observational using a cross sectional study method with a quantitative approach. The study was conducted at 8 Community Health Centers in West Bangka Regency, Bangka Belitung Islands Province, Indonesia in October-November 2018. The research sample of children aged 0-59 months with 310 children. To find out the age of marriage using primary data through interviews and ascertained with secondary data through records at the Puskesmas and the Office of Religious Affairs, stunting data or nutritional status of infants by measuring antopometry. The results were analyzed using the Odds Ratio and Chi Square test 95% confidence interval. The results showed that of the 8 health centers the highest incidence of pregnant women with early marriage under 20 years who had stunting children occurred at the Kundi Health Center (78.6%) and Sekar Biru Health Center (83,3%). There was a significant relationship between the age of mothers getting married early with stunting in children (OR = 1,724; 95% CI = 1,088-2,732; p = 0.020). Early marriage less than 20 years increases the risk of stunting in children. Therefore it is necessary to educate and regulate the age of marriage.

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2.Tambah keywords

1. Introduction

The prevalence of stunting nationwide Indonesia in the last five years is said to be high, research in 2013 showed 30.7% and in 2018 increased to 30.8%. According to the World Health Organization said the prevalence of stunting higher when reaching 30% -39% and is said to be very high if the prevalence was ≥ 40%, related to the proportion of undernourished and poor in infants showed 17.7% figure,very short and short 19.3%, very thinner and thinner 10.2%And fat 8% [1][2][3].

Stunting defined as height for age below -2 standard curve median growth of children. Stunting is a chronic condition poor linear growth of a child, which is accumulating impact of various factors such as poor nutrition and health after the birth of the child [1][4].

Some studies show that children who during the toddler suffered stunting have low cognitive level, academic achievement and psychosocial bad. Children who experience severe stunting in the first two years of life have a very strong relationship to cognitive delays in later childhood and long-term impact on the quality of the resource. The incidence of stunting held since childhood has been associated with a slow motor development and a lower level of intelligence. Other studies have shown that children (9-24 months) that stunting in addition to having a lower level of intelligence, also has a lower valuation on locomotor, coordination of hand and eye, hearing, speaking, and performance when compared to normal children[4].

Efforts by the government issued a policy of regulation 42/2013, which establishes a national movement Thousand Day One Life in an effort to improve the nutritional status of children, followed by a development program including its budget. Stunting has a length of the PTM risk in adulthood, although it can be corrected at an early age. Stunting is a chronic nutritional problems caused by multi-factorial and are intergenerational.

Based on the results of 2018 Riskesdes known that Bangka Belitung Province is one province that experienced problems nutritional status is very short and short of 23.6% and 17% severe malnutrition. Through the Secretariat of the Vice President in the book "100 District / City of Child Intervention Priority for Runt (Stunting) establish Bangka Regency West as one of the Regency / City from 100 Regency / City Stunting priorities for intervention. West Bangka is also the only district in Bangka Belitung Islands were included in the 100 districts with 10 villages priority Priority[3][5].

West Bangka Regency is one of the city based on the results Riskesdes 2013 is a District Stunting city experiencing problems. Prevalence overview of evidence-based infant nutrition status derived from the Basic Health Research results become one of the bases to establish evidence-based policies, including the prevalence of malnutrition / malnutrition (underweight) on baduta child (under two years), performed only 3-5 years. For the availability of information on the progress of nutritional status and gains of nutrition in a region of rapid, accurate, orderly and sustainable among Riskesdas implementation, it is necessary to monitor and evaluate each year[6].

Based on data Stunting West Bangka in the initial survey conducted in January 2018, note that there is a village with the highest number of cases of patients Stunting is Peradong village by 47.06% higher than the 10 villages stunting intervention priorities set by the government. Data 10 villages in West Bangka stunting the Village Tugang than 290 the number of infants measured as much as 123 infants or 42.41% had stunting, Village Tuik of 59 toddlers Yag measured, there were 15 children under five years, or 25.42%, Rukam village of 115 toddlers which is measured under five suffer stunting are 27 or 23.48%, Petar Tumbak village of 291 infants were measured there are 67 children under five suffering stunting or by 23.02%, Simpang Tiga village of 178 toddlers were measured are 74 people under five suffering from stunting or 41.57%

Reproductive health is one factor predisposing found in the efforts to prevent stunting as adolescent reproductive health by avoiding early marriage. because it tends to affect the development of reproductive organs perfect growth. The good immune power of a child also influences the occurrence of stunting. Therefore, we hypothesized that one of the causes of the high rate of stunting in Bangka Belitung is early marriage.

2. Methode

This study uses cross-sectional study with a quantitative approach. The experiment was conducted at eight health centers in West Bangka Bangka Belitung Islands Indonesia in October - November 2018. Samples are parents of young children aged 0-59 months with numbered 310 children. To determine the age of marriage using primary data through interviews with the questionnaire and confirmed by secondary data through the records at the health center and the Office of Religious Affairs, the data stunting or nutritional status by measuring antopometri. The results are analyzed Odds Ratio using Chi Square test and 95% confidence intervals.

3. Results and Discussion

Results of research conducted in West Bangka Bangka Belitung Islands Indonesia found the number of children under five suffering stunting some 2,175 children under five. Based on the sample with the category of parents who have young children aged 0-59 months with totaling 310 children, found udrain married mother at an average 20:18 in the lowest age of 15 years and the oldest was 35 years old. This study categorized into marriage age <20 years and above 20 years. Distribution of the

incidence of stunting by the age of marriage maternal health centers in the region, shown in Table 1 below:

Table 1. Distribution of the incidence of stunting by the age of the mother's wedding in the area of health centers

PHC	Age Marriage	Stunting		Not Stunting		amount
		n	%	n	%	
Spn Teritip						
	≤ 20	20	66.7	18	60	38
	> 20	10	33.3	12	40	22
Jebus						
	≤ 20	15	62.5	11	45.8	26
	> 20	9	37.5	13	54.2	22
Coconut						
	≤ 20	29	65.9	24	54.5	53
	> 20	15	34.1	20	45.5	35
Sekar blue						
	≤ 20	5	83.3	2	33.3	7
	> 20	1	16.7	4	66.7	5
crowbar						
	≤ 20	3	60.0	4	80	7
	> 20	2	40.0	1	20	3
Munthok						
	≤ 20	10	62.5	6	37.5	16
	> 20	6	37.5	10	62.5	16
Kundi						
	≤ 20	11	78.6	9	64.3	20
	> 20	3	21.4	5	35.7	8
Tempilang						
	≤ 20	11	68.8	10	62.5	21
	> 20	5	31.2	6	37.5	11
		Total				310

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Proportional incidence of stunting by the age of marriage at most at the health center Sekar Kundi and blue (over 70%). The relationship between mother's age of marriage with the incidence of stunting based on bivariate analysis, data such as table 2.

Table 2. The relationship between mother's age of marriage with the incidence of stunting.

Stunting	Age		p. value	OR	CI 95%
	≤ 20 th	> 20 th			
Yes	104	51			
Not	84	71	0020	1,724	1088-2732
Total	188	122			

OR, odds ratio; CI, confidence interval

The relationship test using Chi Square test with result p = 0,020 which means there is a significant relationship between the age of the mother is married to stunting. As for looking at risk factors odds

ratio value obtained for 1724 (CI: 1.088 to 2.732), which means the risk of mother married less than 20 years the incidence of stunting by 1.7 times compared with mothers who were married more than 20 years.

When viewed variables that have the risk factors with the incidence of stunting in the district of West Bangka, early marriage age (under 20 years) is still a lot. Early adolescent growth and development of biological puberty begins with a marked presence. The persistence of the traditional practice of early marriage in the countries in Southeast Asia also contribute to iron deficiency anemia. Early marriage among adolescents is generally associated with early pregnancy, and where pregnancy increases the need for iron and affect the worsening of iron deficiency and iron deficiency anemia experienced by adolescent girls[7].

About 1,000 mg of iron is needed to support the changes associated with pregnancy, such as increased blood volume, growth and development of the fetus were ideal, it takes about 300 mg of iron. Most pregnant women, both in developing countries and developed countries, it has a little iron stores early in pregnancy. Teen age pregnancy becomes more risky because of increased iron requirements during pregnancy coupled with increased iron requirements during pregnancy coupled with the need for iron during growth spurt [8]. As for the effect of nutritional status on the reproductive system is energy and nutrition needs are influenced by reproductive age, activity level and nutritional status. Nutrients are needed to meet the growing needs. A nutritional deficiency with anemia and underweight more will give birth to LBW babies compared to women of reproductive age are safe for pregnant[9].

There are other factors causing stunting, which is a factor that directly or indirectly. Factors directly determined by the intake of food, birth weight and disease. While the indirect factors such as economic, cultural, education and employment, health-care facilities. Socioeconomic factors interact with one another as the input of nutrients, birthweight and infectious diseases in children who are stunted due to lack of food intake and disease recurring primarily infectious diseases that can increase metabolic demands and reduce appetite so the impact occurs abnormalities in short form despite factor genes in cells show potential to grow normally. Results of other studies also show thatchildren exposed to secondhand smoke increases the incidence of asthma exacerbations consequently decreased appetite[10][11].

One of the main factors causing stunting toddler is eating. Poor diet will affect nutrient intake, especially the intake of nutrients that play a role in the growth of children. Poor diet effect on the incidence of stunting [12]. Stunting in infants is more common in children who had a simple dish arrangement which only consists of rice, side dishes and vegetables only. Poor diet cause disproportionate unmet nutritional needs of children, especially the intake of micro-nutrients[13].

It is therefore necessary in-depth study on diet and other factors that have not been done in this study, so it can be a major cause of the incident multivariate stunting in infants in West Bangka Bangka Belitung Islands Indonesia.

4. Conclusion

Mother early marriage increases the risk of stunting in children. The effort required is to educate teens and stringent regulations regarding the age of marriage.

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Impact of Early Marriage on Childhood Stunting

Abstract

Pregnancy requires increased iron needs, while teenage pregnancy ~~pregnant women who are still in their teens~~ also needs iron for growth. As a result, ~~This results in~~ teenage pregnancy has~~ving~~ an impact on the risk of stunting in their children ~~born~~. The purpose of this study is to prove the relationship between early marriage and the risk of stunting in children. The design of this study was observational using a cross-sectional ~~study~~ method with a quantitative approach. The study was conducted at 8 Community Health Centers in West Bangka Regency, Bangka Belitung Islands Province, Indonesia, during ~~in~~ October-November 2018. The research sample consisted of 310 children ~~of children~~ aged 0-59 months ~~with 310 children~~. To find out the age at~~of~~ marriage, the researcher used~~ing~~ interviews as primary data ~~through interviews~~ and ~~ascertained with secondary data through~~ records from~~at~~ ~~the~~ Puskesmas, ~~and the~~ Office of Religious Affairs, the measurement of antopometry of stunting data or nutritional status of ~~infants~~children under-five ~~by measuring antopometry~~as secondary data. The analysis of the results used~~were analyzed using the~~ Odds Ratio and Chi-Square test of 95% confidence interval. The results from 8 health centers showed that ~~of the 8 health centers~~ the highest incidence of early marriage (under 20 years old) by engaging teenage pregnant who had stunting children were~~pregnant women with early marriage under 20 years who had stunting children occurred~~ at the Kundi Health Center (78.6%) and Sekar Biru Health Center (83,3%). There was a significant relationship between the early married teenage~~age of mothers getting married early~~ and~~with~~ stunting in their~~in~~ children (OR = 1,724; 95% CI = 1,088-2,732; p = 0.020). Early marriage (under~~less than~~ 20 years old) increases the risk of stunting in children. Therefore, it is necessary to educate and regulate the ~~age of~~ marriageable age~~e~~.

1. Introduction

Nationwide, ~~T~~the prevalence of stunting in~~nationwide~~ Indonesia for~~in~~ the last five years includes in the~~is said to be~~ high category.~~,~~ Some researches found that in 2013, it showed 30.7% and in 2018, it increased up to 30.8%. According to the World Health Organization, ~~said~~ the prevalence of stunting is high~~er~~ when it reaches~~ing~~ 30% -39% and ~~is said to be~~ very high when its ~~if the~~ prevalence is~~was~~ ≥ 40%.~~,~~ Meanwhile, related to the proportion of undernourished and poor nutrition for~~and poor in infants~~ children under-five have~~showed~~ 17.7% ~~figure~~, short and too ~~very~~ short for their age are~~and short~~ 19.3%, thin and too~~very thinner and thinner~~ thin for their heights are 10.2%, ~~A~~and fat children have 8% [1][2][3].

Stunting defined as height for age under~~below~~ -2 standard curve median growth of children. Stunting is a chronic condition on the poor linear growth of a child, which is accumulating the impact of various factors, such as poor nutrition and health after the birth of the child [1][4].

Some studies show that children in ~~who during~~ the toddler period who suffered stunting have low cognitive levels, bad academic achievement, and psychosocial ~~bad~~. Children who experience severe stunting in the first two years of life have a very strong relationship to cognitive delays in later childhood and long-term impact on the quality of the resource. The incidence of stunting ~~held~~ since childhood has been associated with ~~a~~ delayed~~slow~~ motor development and a lower level of intelligence. Other studies have shown that stunting children (9-24 months) have~~that stunting in addition to hav~~ either~~ing~~ a lower level of intelligence or~~, also has~~ a lower valuation on locomotor,

coordination of hand and eye, hearing, speaking, and performance ~~when~~ if they are compared to normal children[4].

~~Efforts by~~ T~~t~~he government effort issued a policy of regulation 42/2013, which establishes a national movement Thousand Day One Life ~~in an effort~~ to improve the nutritional status of children, followed by a development program including its budget. Stunting has a length of the PTM risk in adulthood, although it can be corrected at an early age. Stunting is a chronic nutritional problem~~s~~ caused by multi-factorial and is~~are~~ intergenerational.

Based on the results of ~~2018~~ Riskesdes 2018, it was known that Bangka Belitung Province was~~is~~ one province that experienced problems, such as nutritional status in the category~~is very~~ of short and short for the children age in percentage of 23.6% and 17% of~~severe~~ malnutrition. Through the Secretariat of the Vice President in the book "100 District~~/~~-City of Child Intervention Priority for ~~Runt (~~Stunting~~)~~ established Bangka Regency West as one of 100 ~~the~~ Regencies~~y~~ /-Cities~~y from 100 Regency / City Stunting priorities for intervention~~. West Bangka regency wa~~i~~s also the only district in Bangka Belitung Islands that was~~were~~ included in the 100 districts with 10 villages ~~priority p~~Priority[3][5].

West Bangka Regency was~~is~~ one of the cities~~y based on the results Riskesdes 2013 is a District Stunting city~~ that experienced~~ing~~ stunting problems based on the result of Riskesdes 2013. Prevalence overview of evidence-based children under-five ~~infant~~ nutrition status derived from the Basic Health Research results become one of the bases to establish evidence-based policies, including the prevalence of malnutrition ~~/ malnutrition~~ (underweight) on baduta child (under two years old), conducted~~performed only~~ once for 3-5 years. For the availability ~~of~~ information on the progress of nutritional status and gains of nutrition in a region of rapidly, accurately, organizingly~~rderly~~ and sustainability~~le~~ among Riskesdas implementation are~~, it is~~ necessary to monitor and evaluate each year[6].

Based on ~~data~~ Stunting data in West Bangka on~~in~~ the initial survey conducted in January 2018, it was known~~note~~ that there was~~is~~ a village with the highest number of cases of ~~patients S~~stunting, namely~~is~~ Peradong village which had ~~by~~ 47.06% higher than the 10 villages of stunting intervention priorities established~~set~~ by the government. Data of 10 villages in West Bangka stunting were ~~the Village~~ Tugang village that measured 123 of~~than~~ 290 children under-five~~the number of infants measured as much as 123 infants~~ or 42.41% had stunting, ~~Village~~ Tuik village had ~~of~~ 15 stunting children of 59 children under-five found ~~toddlers Yag measured, there were 15 children under five years,~~ or equal to 25.42%, Rukam village measured~~of~~ 27 of 115 children under-five~~toddlers which is measured under five~~ suffered stunting are 27 or 23.48%, Petar Tumbak village had 67 of 291 ~~infants~~children under-five ~~were measured there are 67 children under five~~ suffering stunting or equal to~~by~~ 23.02%, Simpang Tiga village had 74 of 178 ~~toddlers were measured are 74 people~~ children under five suffering ~~from~~ stunting or around 41.57%.

Reproductive health is one ~~factor~~ predisposing factor found ~~in the efforts~~ to prevent stunting. Maintaining~~as~~ adolescent reproductive health and~~by~~ avoiding early marriage is an example. Those are positive efforts ~~because it tends to affect the~~ in the development growth of reproductive organs perfectly ~~growth~~. The good immune power of a child also influences the occurrence of stunting. Therefore, we hypothesized that one of the causes of the high rate of stunting in Bangka Belitung is early marriage.

2. Method~~e~~

This study used~~s~~ a cross-sectional study with a quantitative approach. The experiment was conducted at 8~~eight~~ health centers in West Bangka Bangka Belitung Islands Indonesia in October ~~-~~-November 2018. The research sample consisted of 310 children aged 0-59 months. To find out the age at marriage, the researcher used interviews as primary data and records from Puskesmas, Office of

Religious Affairs, the measurement of antopometry of stunting data or nutritional status of children under-five as secondary data. The analysis of the results used Odds Ratio and the Chi-Square test of 95% confidence interval.~~Samples are parents of young children aged 0-59 months with numbered 310 children. To determine the age of marriage using primary data through interviews with the questionnaire and confirmed by secondary data through the records at the health center and the Office of Religious Affairs, the data stunting or nutritional status by measuring antopometri. The results are analyzed Odds Ratio using Chi Square test and 95% confidence intervals.~~

3. Results and Discussion

~~Results of R~~research conducted in West Bangka Bangka Belitung Islands Indonesia found that the number of children under five suffering stunting was ~~some~~ 2,175 children under~~ ~~~~-~~~~ five. Based on the sample, ~~with the category of parents who have young~~ children aged 0-59 months were~~ith totaling~~ 310 children~~, Besides, it~~ found ~~udrain~~ that married women~~mother~~ were at an average of 20:18. ~~in T~~the youngest~~lowest~~ age was~~of~~ 15 years old and the oldest was 35 years old. In t~~T~~his study, the researcher categorized ~~into~~ marriage age into ~~<~~≤20 years and over~~above~~ 20 years. Distribution of the incidence of stunting by the age of marriage maternal in the health centers ~~in the region,~~ shown in Table 1 ~~below~~:

Table 1. Distribution of the incidence of stunting by the age of the mother's marriage~~wedding~~ in the area of health centers (Puskesmas)

PHC	Age at Marriage	Stunting		Not Stunting		Total~~amount~~
		n	%	n	%	
Spn Teritip						
	≤ 20	20	66.7	18	60	38
	> 20	10	33.3	12	40	22
Jebus						
	≤ 20	15	62.5	11	45.8	26
	> 20	9	37.5	13	54.2	22
Kelapa~~Coconut~~						
	≤ 20	29	65.9	24	54.5	53
	> 20	15	34.1	20	45.5	35
Sekar biru~~blue~~						
	≤ 20	5	83.3	2	33.3	7
	> 20	1	16.7	4	66.7	5
Puput~~erowbar~~						
	≤ 20	3	60.0	4	80	7
	> 20	2	40.0	1	20	3
Munthok						
	≤ 20	10	62.5	6	37.5	16
	> 20	6	37.5	10	62.5	16
Kundi						
	≤ 20	11	78.6	9	64.3	20
	> 20	3	21.4	5	35.7	8
Tempilang						
	≤ 20	11	68.8	10	62.5	21
	> 20	5	31.2	6	37.5	11
		Total				310

The Pproportional of incidence of stunting by the age of marriage at most at the health center in Sekar Kundi and Sekar biru was the mostblue (over 70%). The relationship between a mother's age of marriage with the incidence of stunting based on bivariate analysis showed, data such as data as the following table 2.

Table 2. The relationship between a mother's age of marriage andwith the incidence of stunting.

Stunting	Age		p. value	OR	CI 95%
	≤ 20 yoth	> 20 yoth			
Yes	104	51			
Not	84	71	0020	1,724	1088-2732
Total	188	122			

OR, Oodds Rratio; CI, Ceonfidence Iinterval

The relationship test using the Chi-Square test with result p = 0,020 which means that there is a significant relationship between the age of married mothers and the mother is married the incidence ofto stunting. On the other hand, As for looking at risk factors of odds ratio value obtained werefor 1724 (CI: 1.088 to 2.732), Itwhich meant thats the risk of mother married women less than 20 years and the incidence of stunting by occurred 1.7 times rather thancompared with womenmothers who were married more than 20 years.

Based on theWhen viewed variables that have the risk factors with the incidence of stunting in the district of West Bangka, early marriage age (under 20 years) is still a lot. Early adolescent growth and development of biological adolescents puberty beginsbegin with a puberty marked presence. The persistence of the traditional practice of early marriage in the countries in Southeast Asia also contributes to iron deficiency anemia. Early marriage among adolescents is generally associated with early pregnancy, and where pregnancy increases the need for iron and affects the lackworsening of iron deficiency and iron-deficiency anemia experienced by adolescent girls[7].

About 1,000 mg of iron is needed to support the changes associated with pregnancy, such as increased blood volume, growth and development of the fetus were ideal, Iit takes about 300 mg of iron. Most pregnant women, both in developing countries and developed countries, it has a little iron stores in early in pregnancy. Teen-age pregnancy becomes more riskiery because of increased iron requirements during pregnancy coupled with increased iron requirements during pregnancy addedcoupled bywith the need for iron during growth spurt [8]. As for Tthe effect of nutritional status on the reproductive system meansis energy and nutrition needs are influenced by reproductive age, activity level, and nutritional status. Nutrients are needed to fulfillmeet the growing needs. A nutritional deficiency with anemia and underweight mainly more will give bearbirth to LBW babies if it is compared to women of reproductive age who are safe for pregnant[9].

There are other factors causing stunting, namely direct and indirect factorwhich is a factor that directly or indirectly. Direct fFactors directly were determined by the intake of food, birth weight, and disease, wWhile the indirect factors were such as economic, cultural, education and employment, health-care facilities. Socioeconomic factors interact with one another as the input of nutrients, birthweight and infectious diseases in children who are stunted due to lack of food intake and disease recurring primarily infectious diseases that can increase metabolic demands and reduce appetite, thusso the impact occurs abnormalities in short form despite factor genes in cells show potential to grow normally. Results of other studies also show that children exposed to secondhand smoke increases the incidence of asthma exacerbations consequently decreased appetite[10][11].

One of the main factors causing stunting toddler is eating. An Poor dietUnbalanced eating pattern will affect nutrient intake, especially the intake of nutrients that play a role in the growth of children. Poor dietEating pattern aeffects on the incidence of stunting [12]. Stunting in infantschildren under-five is more common in children who had a simple menudish arrangement which only consists of rice, side

dishes, and vegetables ~~only~~. ~~Poor diet~~An unbalanced eating pattern causes disproportionate unmet nutritional needs of children, especially the intake of micro-nutrients[13].

It is, therefore, necessary in-depth study on eating patterns~~diet~~ and other factors that have not been conducted~~done~~ in this study, thus~~so~~ it can be a major cause of the incident multivariate stunting in ~~infants~~children under-five in West Bangka Bangka Belitung Islands, Indonesia.

4. Conclusion

Mother with early marriage increases the risk of stunting in children. The effort required is to educate teens and tighten the ~~stringent~~ regulations regarding the age of marriage.