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Gestation Period and Its Bio-Psychosocial and Economic Factors Analysis on Toddler Growth and Development



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Abstract

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The growth and development of toddlers is influenced by hereditary and environmental factors. Genetic factors, biologically have strong influences on toddlers' growth in their early years of life. While psychologically, a good interpersonal relation of pregnant women with their families will make them more ready to undergo the pregnancy and childbirth. On the other hand, socially, the level of parental education might affect the nutrition intake and parenting patterns. For the economic factor, the level of family income and their ability to provide sufficient nutrition input might affect the nutritional status during gestation. The nutrition input during pregnancy highly contributes to the fetus growth and development. A poor nutrition input during gestation might cause an Intrauterine Growth Retardation (IUGR) and growth and development disorder. This study aimed to analyze the bio-psychosocial and economic factors of gestation period on toddler growth and development. This is a correlational analytic study with 80 mothers and toddlers as the sample. The data was analysed using univariate, bivariate with Chi square and multivariate with logistic regression. The results show that the statistically significant independent variables which influence the growth and development of toddlers are the mother height ($p = 0.001$), LILA ($p = 0.008$), family income ($p = 0.007$), infant birth weight ($p = 0.009$) and family support ($p = 0.013$). While the statistically insignificant independent variable is the mother level of education ($p = 0.086$).

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INTRODUCTION

A significantly fast growth and development in human life is taken place during toddler. During this 'golden age' period, toddler's cognitive, physical, motoric and psychosocial aspects are fastly developed (Welasasih dan Wirjatmadi, 2012). Consequently, any disorder or late growth on them will be easily detected by their attentive family member. In addition, sufficient loving care and fulfilment of basic needs such as healthy diet and caring is particularly needed in this development period in order to have quality human resource who are healthy, smart and productive, (Soetjiningsih, 2012).

Factors affecting the children development in general are the genetic/ heredity, gender, race/ ethnicity, age and environment factor which comprises prenatal and post natal environment. Specifically, in gestation period, if any developmental obstacles take place previous to the 20th week of pregnancy, it might affect the brain and somatic development of te fetus which resulted in unaccomplished of newborn growth on their childbirth (Anugraheni, 2012).

Biologically, a person'early life growth indirectly effect his/her body size (Kusharisupeni, 2014). While psychologically, a mother interpersonal relationship with her family will give effect oh her readiness in undergoing the pregnancy and labor. On the social factor, toodler growth and development are affected by their parent knowledge on healthy diet and appropriate parenting which highly correlated to the level of education. It means that sufficient diet and appropriate parenting will help in optimalizing the toddler growth and it works

conversely (Chaudhury, 2013).

A family income is one of important variable which affect the mother nutrition input during pregnancy. (Anindita, 2012). Balanced diet is needed during pregnancy and it affects infant growth and development. Imbalanced or insufficient nutrition might result on newborn baby with low body weight or called *Intrauterine Growth Retardation* (IUGR) which consequently, the development of the toddler is in disorder or experience late blooming. On the other hand, a mother with quality nutrition input will result on healthy baby. (Anugraheni, 2012).

Based on the review of related journals, it can be said that research focusing on bio-psychosocial and economic factors of gestation period on toddler growth and development is highly needed. The objective of this study is to analyse those factors in relation to toddler growth and development.

MATERIALS AND METHODS

This is a correlational analytic study which was conducted in Desa Mangliawan Kab. Malang from June to August 2019. The population is mother and toddler from the aforementioned research setting with the sample of 80 respondents. The data was collected using a set of questionnaire and *KPSP* observation checklist to monitor toddler development. After the collected data was sorted and coded, the next step was the data analysis using SPSS 22. The analysis was also analysed using univariat, bivariate with Chi square and multivariate with logistic regression respectively.

FINDINGS

Table 1 Research Subject Characteristics

Karakteristik	Kriteria	n	%
Mother Height	< 145 cm	36	45
	≥ 145 cm	44	55
LILA	< 23.5 cm		
	≥ 23.5 cm	2456	3070
Family income	< Rp. 2.781.564		
	≥ Rp. 2.781.564	3248	4060
Mother level of education	< High School		
	≥ High School	2258	27.572.5
Infant birth weight	< 2500 gr		
	≥ 2500 gr	3743	46.353.8
Family support	Lemah		
	Kuat	2060	2575

Source: Primary Data 2019

Table 2 Frequency Distribution of Bio-Psychosocial Economic Bivariate analysis of Gestation Period on Toddler Growth and Development

Variable	Toddler Growth and Development				OR	p
	Late		Normal			
	n	%	n	%		
Mother height						
< 145 cm	23	63.9	13	36.1	6.01	<0.001
≥ 145 cm	10	22.7	34	77.3		
LILA						
< 23,5 cm	16	66.6	8	33.4	4.58	0.003
≥ 23,5 cm	17	30.4	39	69.6		
Family income						
< Rp. 2.781.564	22	68.7	10	31.3	7.40	<0.001
≥ Rp. 2.781.564	11	23	37	77		
Mother level of education						
< High school	17	77.3	5	22.7	8.92	<0.001
≥ High school	16	27.6	42	72.4		
Newborn weight						
< 2500 gr	24	64.8	13	35.2	6.97	<0.001
≥ 2500 gr	9	21	34	79		
Family support						
Weak	15	75	5	25	7.00	<0.001
Strong	18	30	42	70		

Source: Primary Data 2019

Table 3 Analysis on doubled multivariate logistic regression

Variable	OR	CI 95 %		p
		Lower Range	Upper Range	
Mother height	0.01	0.00	0.13	0.001
LILA	0.05	0.01	0.46	0.008
Family income	0.05	0.01	0.45	0.007
Mother level of education	0.15	0.02	1.31	0.086
Newborn weight	0.07	0.01	0.51	0.009
Family support	0.02	0.00	0.41	0.013

Source: Primary Data 2019

DISCUSSION

A. The Relation of Mother height to Toddler Growth and Development

Body weight is affected by heredity and environment factors. A toddler height during his/her children growing period is influenced by their genetic factor (Levy, 2008). Low body height and poor nutrition status during pregnancy will increase the incident of *intrauterine growth retardation* (IUGR). This will also increase the incident of

growth and development disorder on toddler. (Victora, 2008).

As cited in Black *et,al* (2008), poor fetus growth during gestation will influence the newborn optimal growth and development. This disorder is affected by mother poor nutrition status and (shorter) mother height. It is inline to the result of this study which showed that 77,3% of the participants with body height ≥ 145 cm has toddler with normal growth and development.

Mamabolo *et al* (2015) explains that parents with genetically (shorter) body height will highly expecting (shorter) body height on their children. It does not apply on parents who have (shorter) body height due to the poor nutrition input. This study does not differentiate the participants based on those factors (genetically or pathologically) which consequently becomes one of the study limitations. Semba *et al* (2008), and Zottarelli *et al* (2007) study show that mother body height is significantly correlated to toddler nutrition status.

Based on those data, it can be concluded that there is a significant statistical relation between mother height and toddler growth and development. A mother categorized as (high) body height with normal body mass index will have positive impact on their newborn growth and development.

B. The Relation of LILA to Toddler Growth and Development

A mother nutrition status before and during gestation is a crucial to have a healthy newborn. In addition, LILA (size of upper arm) of the pregnant mother is one of indicators to check their nutrition status. Those who have LILA < 23.5 cm might have chronic energy deficiency/ KEK (Proverawati, 2009). In another word, conversely, a mother with LILA \geq 23.5 cm shows her good nutrition status. Someone nutrition status is influenced by his/her diet (Francis, 2005).

On a case of pregnant mother, her nutrition status will affect the fetus growth. Her normal condition will result on a healthy newborn with normal body weight to support an optimal growth. This is supported by this study result that most of participants (69,9%) with LILA \geq 23,5 cm have newborn and toddler with normal growth and development.

Mother nutrition status during pregnancy will affect the infant and the newborn nutrition status. During the gestation period, the fetus development is highly influenced by the mother nutrition status. To have a healthy newborn with normal body weight, and born without birth defects so the the mother should have normal nutritional status. The mother with the aforementioned condition will not experience newborn with low birth weight (BBLR) which may lead into toddler growth disorder. It is empirically supported by this study result that 16 (sixteen) mothers with LILA < 23.5 cm have babies with low birth weight (BBLR).

C. The Relation of Family Support to Toddler Growth and Development

Higher degree of anxiety and stressed condition is experienced concurrently during the pregnancy. This condition is not only experienced by the pregnant mother but also her family, especially them who live at the same house with her. It also affects her husband. Any changes and adaptation process during pregnancy will be experienced by the whole family which makes them to indirectly involved. The family support (love caring and motivation) will give the pregnant mother feeling comfort, feeling secured and relaxed so she is not too worried and or occupied by her pregnancy (Susanti, 2008).

Friedman in Suryanto *et al* (2014) states that any positive perception and acts by any family member is called family support. Any support and help will be given by the family member who possesses good motivation and support believe. This kind of support is needed during any part of someone's life. A family with its various functions both physically or mentally will have the effect on family adaptation process and health. The family support, especially on health care matter, is highly needed by mother during her pregnancy. Every woman will experience anxiety on her pregnancy regardless her amount of pregnancy. This anxiety mostly applies to women who are very content with her pregnancy.

Every pregnant woman is in doubt in undergoing her nine (9) month pregnancy with all its discomfort or changes especially on the changes of roles once the baby was born. The husband support will help the mother to have smooth labor and breast feeding. With a good quality of family relationship, a pregnant mother will have an ease in dealing with any problems during her pregnancy. Her husband will also pay more attention and accompany her during her pregnancy (Kusmiyati, 2010).

In dealing with problems, anyone needs family support which plays a vital role to successfully solve the problems. With this good support, the person will have higher confidence and motivate himself to solve the problems he is facing. Psychologically and emotionally, the support from the family is one of the factors needed to have a successfully developed pregnancy. A woman who has a good relationship and live-in harmony with her husband and her family will benefit good emotional effect for her pregnancy.

Her good emotional state will give good influence for her baby and it affects the growth and development of the fetus which in consequence will give effect on the toddler growth and development. It is supported by data gathered from this study which shows that emotional support from the family (for about 70 %) have effect on normal growth and development of the toddler.

Moreover, psychosocial factor which plays a vital role during a woman pregnancy or after her-giving birth is the family support, which consequently followed by the growth of the toddler. It then follows by the simulation, support and parenting style which will affect the development of the toddler (Barros *et al*, 2008). Considering that, we can say that this study resulted the same conclusion.

D. The Relation of Mother Education Level to Toddler Growth and Development

Education is a long-life learning effort made to improve someone's skill and character which can be taken through academic or non-academic measures. How educated the person is, can be seen from how he/she manages and disseminate the information. More educated the person, easier for them to get and absorb the information to improve their knowledge. On the other hand, less educated people will have problems in perceiving and absorbing new information.

A person acts is highly influenced by his/her education level which also affect how the person respond problems and find the solution in his/her life. Most commonly, he/she will act more logically and much easier in accepting new good ideas and opinion. In this case, an educated mother might pay more attention on her health during her pregnancy and in having her pregnancy regularly checked.

Furthermore, the parents' level of education will affect their knowledge about nutrition and parenting style. In reverse, a good parenting and normal nutritional status will optimize the growth and development of the toddler. (Chaudhury, 2013).

As reported by Febrianto (2012) the parents' level of education have effect on the toddler nutritional status which becomes the indicator of their growth and development during home monitoring.

It happens because the educated parents receive a lot of information which benefit them to have better life quality to improve their universal health state.

Mother with good education level, based on statistically significant bivariate analysis, has 8.92 times chances to have toddler with normal growth and development, yet on multivariate analysis it shows that the mother level of education does not statistically significant to the toddler growth and development.

E. The Relation of Family Income to Toddler Growth and Development

The family income plays a big role in the family survival and eco-social status of the household. It indirectly influences the nutritional status of the whole family member. A family with low-income status might result on low inadequate nutritional status of the family member, especially the infant and toddler. This is a cliché excuse for the problem of low nutritional family status worldwide. Riyadi *et al* (2006) states that common indicator of low nutritional family status is their low-income status which indicates a very low budget on basic meals.

The study result indicates that most of the respondent's family income derives from the husbands. Additionally, Febrianto (2012) states that someone health state is specifically influenced by his/her income. Lower their income and socio-economic status the bigger the effect on their future health state. Toddler and children health status can be confirmed by looking at their growth indicated by their body weight and height which is checked periodically. It can be concluded that there is a significant relation between their family income level and the toddler nutritional status. In line to that, Rukmana dan Indawati (2014) mentions that there is a significant relation between socio-eco status of the family, especially the parents' income, with the toddler growth.

A family with high income level might provide better parenting and can fulfill their children nutritional intake to grow, provide safe environment, avoid illnesses and exposure of patogen (Astari *et al*, 2005). The higher someone's income level, it usually affects their diet which becomes varied and balanced. On the other hand, it might also provoke them to consume unhealthy diet or junk food. It mostly due to their busy life and changes in life style.

Eating habit usually changes concurrently with the changes on income level. This means that besides an improvement on income level, the family needs to improve their knowledge in healthy diet to have normal family nutritional status (Suhardjo, 1999).

This because the family economic status has significant effect on the incidents of children whether they will have normal or abnormal body weight and height. With this in mind, we can say that the study result is inline to the previous research.

F. The Relation of Newborn Weight to Toddler Growth and Development

The average of life expectancy, globally, in the future is highly affected by some factors. One of them is newborn body weight (Zareian *et al*, 2014). From the data of newborn body weight, we can relate them with the children development, level of education, and their behaviour during childhood or teenage. The most crucial period of someone's life is during his/her golden age period. During this life phase, the fastest growth and development takes place. Any disorder or late blooming will easily be detected. Some of the aspects which are fastly developed are cognitive, physical, motoric, and its psycho-social aspects. (Welasasih dan Wirjatmadi, 2012).

The newborn body weight is one of indicators for healthy society. This indicates the child potential growth and development in the future. Those who are born with normal body weight have less mortality rate especially during perinatal. Additionally, they might have less illnesses both mentally and physically.

El Taquri *et al* (2008) reported that in Lybia the newborn body weight also significantly related to the nutritional status. Babies who are born with abnormal body weight (low) will mostly experience late blooming compared to those who are born with normal body weight. Hamam (2005) states that newborn baby with low body weight might have higher chnaces in getting infected especially when they do not get adequate nutritional intake. Based on Rahmad *et al* (2013) and Mardani *et al* (2015), babies with low borth weight might have poor nutritional status compared to those who are born with normal body weight. The quality of the toddler growth and development is crucially affected by their newborn body weight.

Babies body weight indicates their life development and most importantly they will have normal antropometri correspond to their age. Arifin *et al* (2012), states that infants born with normal body weight who are supported by adequate nutritional intake and balanced diet will decrease their illnesses incidents and grow optimally especially

when it is also supported by good healthcare, complete vaccination, and good immune system.

Baby mortality rate is caused by multiple factors. One of the most crucial factors is the low-newborn birth weight. Those babies born with this condition might experience mental and physical disorders in their early development years which mostly give burden financially. This study result indicates that 79% of the normal growth and development takes place on babies born with normal body weightwhis is ≥ 2500 gram. In another word, it can be concluded that this study result is inline with those previous studies.

CONCLUSION

Based on the data analysis, it can be concluded that the statistically significant independent variables which affects the toddler growth and development are mother height ($p=0.001$), LILA ($p=0.008$), family income ($p=0.007$), newborn weight ($p=0.009$) and family support ($p=0.013$). While the independent variable which is not significant statistically is the mother level of education ($p=0.086$).

SUGGESTION

It is suggested to the healthcare professionals to give counselling on good diet and nutritional intake. Besides, social support from the family is highly needed because the family commonly does not have sufficient knowledge on good diet or healthcare, especially in taking care the mother during gestation.

For the respondents, it is suggested to understand the importance of having adequate nutritional intake to optimize the fetus growth and development to avoid the growth disorder in their toddler golden age. Furthermore, for women in general, they need to understand the importance of having sufficient nutritional intake in preparing them for their pregnancy to have quality toddler growth and development.

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