

Relationship between Parenting, Family Income, Nutritional Status and Gross Motor Skills of Children

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Abstract

The purpose of this study was to analyze the relationship between parenting, family income, nutritional status and gross motor skills of children age 5 to 6 years. This study was conducted in the Kindergarten of Sub-District of East Praya Central Lombok Regency, West Nusa Tenggara, Indonesia. This research uses a quantitative approach with multiple correlation research method. Ninety-seven children were selected randomly using simple random sampling. The results of this study indicate that parenting, family income and nutritional status associated simultaneously and significant with gross Motor skills. The total influence of 71.8% gross motor skills variable is explained by parenting, family income, and nutritional status. It can be concluded that better parenting accompanied by a high family income and good nutritional status it can be ascertained gross motor skills will also be better.

Keywords: Parenting, family income, nutritional status, gross motor skills

Introduction

Early Childhood is an age group in a unique developmental process because the growth and development of children occur concurrently during the sensitive period (the golden age). The golden age is the most appropriate time to give a strong provision to children. This time is the right time to train physical ability, language development, social-emotional, self-concept, the art of moral and religious values. So that the development effort of all potential of early childhood should start as early as possible so that growth and child development is achieved optimally. Factors that can affect child growth include heredity, environment, culture, economy, education, social, climate/weather, and nutrition. Poor levels of stimulation in the home, chronic under-nutrition (stunting), and iron and iodine deficiencies are key risk factors (Grantham-Mcgregor *et al.*, 2014). Infants and young children attain their optimal development through a combination of genetic potential, psychosocial stimulation, adequate nutrition, and a safe, clean physical environment (Black *et al.*, 2017). There was a significant and positive relationship between iron intake and both total and non-verbal IQ, significant and positive relationship between folate intake and both total and verbal IQ (Arija *et al.*, 2006).

Aspects of child development that can be developed for early childhood are moral, religious, social, emotional, language, cognitive and physical motor skills. Given the many aspects of development that should be possessed by the child, then the stimulation provided by parents should be appropriate be it gross motor skills and fine motor skills. Factors restricting the development of motor skills include the condition of the mother during pregnancy, difficult birth, under normal IQ, excessive protection, lack of stimulation, impulse and lack of opportunity to move all parts of the body will be able to slow the development of motor abilities of children.

Parenting about growth and development very helpful children achieve normal growth and development according to age levels. Genetics plays a role in physical development (Kim *et al.*, 2010), (Fox, Hershberger and Bouchard, 1996). But half of the variance is likely to be influenced by the environment (Golding *et al.*, 2014). Psychosocial stimulation and nutritional status had a positive and significant effect on the cognitive development of the preschool children (Warsito *et al.*, 2012). The toddlers brought up in a non-stimulating home environment had 4.25 times and 4.75 times delayed gross motor and fine motor development respectively than those brought up in a stimulating home environment (Sundaram and Siddegowda, 2013). Knowledge about the growth of children expected growth and development of children more leverage so that in the future will produce the next generation better. In Indonesia, the common

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cause of stunted growth and development of children under five is caused by poverty. Both stunted and iron-deficient children tend to have more passive behavior and limited exploration of their surroundings (Meeks *et al.*, 2016). Summary of the study of UNICEF Indonesia October 2012 declared even though Indonesia has shown a decline in poverty on a permanent basis, but the nutritional problems in children toddlers showed little change. From the years 2007 to 2011, the proportion of the poor population in Indonesia has decreased, but the problem of nutrition does not show significantly decreased (UNICEF, 2012).

Several studies have shown a link between nutrition and family income, including research by (Lyatuu *et al.*, 2016). Micronutrient deficiency in Tanzania is a significant public health problem, with vitamin A and nutritional deficiencies in children due to a family income still below the national average that affects 34% of children aged 6 to 59 months since 2007. Similarly, conducted by (Barnhill, 2013) that the relationship between the nutritional level of children with the level of family income. Safron *et al.* (2011), their study also found a significant relationship between family income, nutritional status, physical and environmental characteristics. Stimulation, gross motor development, and fine motor development were significant mediators in the relationship between dietary diversity and mental development (Larson *et al.*, 2017). Ejaz Ali Khan and Azid (2011) Malnutrition is positively related with congestion in the household (number of household members per room) of primary school-age (five to ten years) children in urban and slum areas of Bahawalpur Pakistan.

The results of research (Chow and Louie, 2013) suggest that performance of locomotor skills by preschool children is affected by their schools' physical environment. Barnett *et al.* (2012) the current study found associations between use of electronic gaming entertainment and children's fundamental movement skills and Pre-school children who spent more time playing interactive electronic games were more competent in object control skills. Although much of children's motor skills have a heredity component, at least half of the variance is likely to be influenced by the environment (Golding *et al.*, 2014). Hu *et al.* (2015) found that significant differences in quality of outdoor play across kindergartens in different locations (urban/non-urban areas). Because the benefits of outdoor play for children's well-rounded development are maximized when children experience enjoyment and, at the same time, gain physical, motor, cognitive, and social-emotional competence.

The study also shows the relationship between family income, nutrition, and motor, that is (Kumagai *et al.*, 2014), their results indicate that family income and nutritional intake affects the development of motor and physical primary school children living in the Shimokita Peninsula, Aomori Prefecture, Japan. But some of them do not balance the nutritional intake, snacks, resting

patterns, and exercise are enough that it is physically affecting to obesity at a young age in Japan. (Özer and Özdöl, 2014), their study also showed that children with low social status had a prevalence with good anthropometry and lower psychomotor abilities than children of high socioeconomic status.

It is a case study of children in the Turkish Antalya region in the study by Bernal *et al.* (2011). The research was conducted by a coordinated approach involving schools, parenting and family income in San Vitor (Vitoria, Spain), an independent school with public funds. School principals, coordinators, and school counsellors are professionals who collaborate directly with the research. The sample is parents and children aged 8-10 years. Of the 75 families in the school, 65 people who earn above the regional minimum wage average of the local area, get the level of intelligence and motor of children to better 87% of children whose income level of parents under local regional minimum wage.

Among the above studies only conducted a separate study between family income (social status) with psychomotor, nutrition with motor skills, family income and nutritional intake with motor skills. But there has been no research related to relationships parenting, family income, nutritional status with gross motor skills of children. So Based on this background then the problem formulation in this research is whether parenting, family income, and nutritional status are related simultaneously and significant with gross motor skills ?.

Review of Literature

Parenting

Parenting is a complex activity that includes many specific behaviors that work individually and together to influence child outcomes (Darling, 1999). States parenting is the whole interaction between parents and children. In the interaction, there is a way of communicating, respecting, caring, disciplining and behaving towards children (2000: 10). Significant relationships between the parenting styles of mothers with children's behavioral problems (Alizadeh *et al.*, 2011). The family is the first window of the child, parenting style and its influence on children could greatly affect their understanding, attitude and school achievements (Kordi, 2010).

In addition, parenting according to Paul Hendry 1989: 392) is an educational way that affects the child either directly or indirectly, through attitudes and care by parents. While understanding the parenting based on training module cadres of family education can be defined by how parents foster child survival, growth, and development both physical and spiritual so that children later become mature human. According to Soegeng (2004:125), parenting is a way of approaching adults to children by providing guidance, direction, influence, and education, so that children become adults and able to stand on their own. Parenting styles are the manner in

which parents rear their children. Baumrind (2003) identified four parenting styles: authoritative, authoritarian, permissive-indulgent and permissive-uninvolved. The home environment had a significant relation with children's concurrent social development, fine motor development, and gross motor development (Gutman and Feinstein, 2010).

Family Income

Distinguishes income into three: Income in the form of money, Revenue in form of goods and Receipts which is income. Family income by Supariasa *et al.* (2012:24) Employment (main work, eg agricultural work, and additional work, eg seasonal work). 2) Family income (salary, wages, remuneration, home industry, food / non-food agriculture, and debt). 3) The wealth that looks like land, number of cattle, cars, motorcycles). 4) Expenditure/budget (expenditures on food, clothing, electricity, education, oil/fuel, transportation, recreation). 5) The price of food depends on the market and season variations. Family stress caused by problems with the fulfillment of the family economic function, affects the way parents fulfill their parental role and poverty is a negative-acting factor in the family functioning (Banovcinova, Levicka and Veres, 2014).

Parents' low ability to finance education, coupled with the poor status of physical and instructional resources were inhibiting factors to students' academic achievement in the study locale. Socio-economic factors such as family income level, parents' level of education, adequacy of learning and teaching materials or resources and occupation, all influence the quality of education as well as the ability of education to improve life circumstances. (Mary Nadenge Gabriel, Ngesu Lewis Muli, Isaac Muasya, 2016). Low-income communities are more likely to lack resources that support children's play, such as parks, recreation facilities, and safe neighborhoods and streets for outside play (Lightfoot, Cole, and Cole 2013:6).

Nutritional Status

Nutrition is the main pillar of health and well-being throughout the life cycle. According to Supariasa *et al* (2001:17) that the nutritional status is divided into two namely: 1) Nutritional status is normal: the state of the body that reflects the balance between consumption and the use of nutrition by the body. 2) Malnutrition: a pathological state due to a deficiency or excess of a relative or absolute one or more nutrients. The development of children may be influenced by their nutritional status, and obesity may pose risks in terms of gross motor performance (Onofre *et al.*, 2015). Children with obesity displayed lower gross motor skill levels compared with peers of healthy weight and largest differences were seen in locomotor and balance skills (Roberts *et al.*, 2012).

Boys and girls in social vulnerability showed inferior performance in most motor skills, moderate perceived competence and inferior school performance (Nobre, Valentini and Nobre, 2018). Assessment of nutritional status is used to determine the state of the nutritional status of children. Significant higher proportions of children with low ICFI scores had illiterate mothers, were older and belonged to lower socioeconomic strata (Lindsay *et al.*, 2008).

Gross motor skill

Motor development is the process through which a child acquires movement patterns and skills. It is a continuous process of modification that involves the interactions of several factors: (1) neuromuscular maturation; (2) the physical growth and behavioral characteristics of the child; (3) the tempo of physical growth, biological maturation and behavioral development; (4) the residual effects of prior movement experiences; and (5) the new movement experiences (Malina, 2004). Between the ages of 3 and 6, children make great advances in gross motor skills those that use the large muscles such as running and jumping (Lightfoot, Cole and Cole, 2013). Magill (2001: 3-5) defines gross motor skills as skills that use large muscles to achieve certain skill goals such as walking.

Santrock (2002: 145) concludes gross motor skills include the activities of large muscles such as moving the arm and walking. Bruce and Maggitt (2005: 25) interpret motor skills including gross or coarse motor skills and fine muscle skills. This muscle serves to perform basic body movements that are coordinated by the brain, such as walking, running, jumping, kicking, throwing, hitting, pushing and pulling. According to Hurlock (1997: 150). Factors affecting psychomotor development (1) Genetic nature (2) Condition of preborn mother (3) Environmental condition (4) Health and Nutrition (5) IQ (6) Presence of stimulation, encouragement, and opportunity (7) Parenting (8) Physical Disabilities.

Subjects and Methods

Location

This study was conducted in the Kindergarten. The target population in this study were all kindergarten students located Sub-District of East Praya Central Lombok Regency, West Nusa Tenggara, Indonesia.

Subject

This study was multiple correlations design included mothers with preschool children as the respondents. The research subjects for children aged 5-6 years in Kindergarten. Sampling selected through Simple Random Sampling and 97 children chosen from 10 schools of Kindergarten. Sampling criteria (1) children 5-6 years in Kindergarten still had mothers, (2) lived with their

mother, (3) lived in Sub-District of East Praya Central Lombok Regency, West Nusa Tenggara and (4) not twins.

Data collection

This research uses a quantitative approach, while the research method uses multiple correlations descriptive. Data included the parenting and family income was collected using questionnaires. The nutritional status data of the children was measured anthropometrically. Gross motor skill data was collected using questionnaires and direct observation.

Statistical analysis

The scores for the question items for each variable were summed and categorized into intervals.

Table 1 Categories and distribution of the respondents and children (n = 97) Variable

Variable Categories		n	%
<i>Gross Motor Skills</i>			
1	Less	17	17.5
2	Enough	60	61.9
3	Good	20	20.6
<i>Parenting</i>			
1	Authoritarian	19	19.6
2	Permissive	39	40.2
3	Democratic	39	40.2
<i>Family Income</i>			
1	Rich	13	13.4
2	Medium	77	79.4
3	Poor	7	7.2
<i>Nutritional Status</i>			
1	Obesity	0	0.0
2	Fat	3	3.1
3	Normal	83	85.6
4	Thin	8	8.2
5	Very Thin	3	3.1

Table 2 Gross Motor Skills scores and correlation with various variables

Variable Categories	r		p
Parenting	0,534	28,5%	0,001
Family Income	0,484	23,5%	0,001
Nutritional Status	0,787	62%	0,001
Parenting, Family Income, Nutritional Status	0,847	R square 72%	0,001

Results

Based on statistical test result found that parenting correlated significantly with gross motor skills, the value of correlation coefficient = 0.534 (28.5%) with a significance value = 0.001. family income correlated significantly with gross motor skills, where the value of correlation coefficient of 0.484 (23.5%) and significant value =0.001. Nutrition Status correlated significantly with gross motor skills, the value of correlation coefficient

=0.787 (62%) with a significance value = 0.001. Parenting, family income, and nutritional status correlated simultaneously and significantly with gross motor skills, R-value = 0.718 and the correlation coefficient = 71.8% and significance value=0.001.

Discussion

The major findings of the present study highlight significant relationships between the parenting, family income and nutritional status with gross motor skills. Based on these findings, the higher the family income will increase the gross motor skills, as well if the increased family income will certainly increase the gross motor skills of children and the better the state of the nutritional status of children then it can improve the gross motor skills well. Of the variables that are most strongly related to gross motor skills are nutritional status variables. Increased revenues lead to an increase in total expenditure including expenditure on food. Increased food expenditures result in more food being purchased so that nutritional needs are also met. Increased income is expected to increase food consumption both in quality and quantity, which in turn can also improve nutritional status. As it is known that nutrition plays an important role in the gross motor development of children if less nutrition then the child's gross motor development will not be achieved maximally.

Motorics are closely related to nutritional status, in terms of body length to age and body weight by age (Grantham-McGregor, Fernald and Sethuraman, 1999). From the results of a number of studies conducted by (Yazdi Feyzabadi *et al.*, 2017) conclusion the behavior of adolescent nutritional intake affects the motor of adolescents in addition is also influenced by environmental, socio-cultural and physical influences, namely by factors related to poor parenting practices, high socioeconomic level, family characteristics, inappropriate social pressure, and lack of knowledge and self-efficacy adolescent. The nutritional composition data calculated from 89 dishes consumed in Trinidad can be used to assess dietary intake, the nutritional status that is good for the motor, and can determine dietary risk factors for chronic illness (Ramdath *et al.*, 2011).

Research by (Park *et al.*, 2011) results show that both acute and chronic measures of malnutrition significantly affect baseline developmental status as well as the rate of improvement in both determinant of cognitive (MDI) and psychomotor development (PDI) scores at internationally adopted children in the USA. Gross motor delays and The severity of delays were related to z scores for weight, height, and head circumference of international adoptees at the time of entry into the United States (McDonald, 1999). Research at public schools in Ceará (Brazil), living in social vulnerability, Two hundred eleven (211) children participated, results show that Boys and girls in social vulnerability showed inferior performance in most motor skills, moderate perceived competence, and inferior

school performance. The finding research (Taylor and Yu, 2009) of South Africa's performance in PIRLS 2006 yields three very concerning results were the overall performance measured by the national average reading score is extremely low by international standards. the overall performance, SES (Socioeconomic Status) is a very important determinant of reading achievement, SES is a very important determinant of reading achievement, both in terms of how widely reading achievement varies by SES and how much of the overall variance in reading scores is explained by SES.

Parenting is an important factor in children learning about something that exists in their environment, especially the closest environment. Imitation period and identification is the period that emerged during early childhood, then the parenting provided by the parents to their children is very influential in all aspects of development, including gross motor skills. It is related whether the child is given the opportunity and encouragement by the parents with the motor potential owned by the child.

From the results of a number of studies conducted by (Khowaja *et al.*, 2015) conclude parenting program can be applied to mothers attending family health centers in Pakistan. Mothers need positive reinforcement and constant encouragement at the participant level. Integrating such a program into primary health care at the population level has the potential to maximize the child's motor development gained from the mother's parenting skills level, and to improve parenting skills at the country level. Research conducted by (Freidenreich, Duncan and Shea, 2011) explains the interrelation between parenting and high school students' motor intelligence to think of three interrelated genetic models: genetic models depicting genetic inheritance, meiotic models depicting the process by which genes are separated into sex cells, and molecular models that describe the mechanisms that connect genotypes with phenotypes in individuals. The findings indicate that the interrelationships between parenting support the motor development of high school students are associated with these three genetic models.

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The results of a study indicate that motor and physical development is quite good, but because of their disproportionate balance between nutritional intake, snacking resting patterns, and moderate exercise it is physically affecting obesity at a young age in Japan from 42 fifth graders of elementary school (Kumagai *et al.*, 2014).

The results (Bernal *et al.*, 2011) held on a continuous basis for 2-3 years showed that from 75 families in the school, 65 people who have income per capita earned above-average local, the level of intelligence and motor child better 87% of children whose income level of parents under the local area.

A number of studies conducted by researchers who showed a relationship between parenting, family income and nutritional status with gross motor skills such as research by (Barnhill, 2013) showed correlation between the nutritional level of children with the income level of the family, likened to this study, such as "Buying Health": because there was an influence between the costs incurred to buy the needs in the fulfillment of nutrition of children with the level of the income family, if the income is family not sufficient the cost of fulfilling the nutrition of the child will also affect the nutrient intake that is less due to the needs that can not be fulfilled due to family income factors

Research conducted in Tanzania by (Lyatuu *et al.*, 2016) concluded significant public health problems, with vitamin A and nutritional deficiencies in children due to family income that is below the national average affecting 34% of children aged 6 to 59 months since 2007. The conclusion of the research is that advocacy support in planning and budgeting at the district level has succeeded in ensuring the district allocation for the program helps to increase the nutritional intake of children by providing subsidized funds to families with children aged 6 to 59 months and less able. The results study from (Safron *et al.*, 2011) showed a significantly correlated association was found between family income, nutritional status, physical and environmental characteristics. Research by (Warsito *et al.*, 2012) explains based on research results that are Psychosocial stimulation, participation in early childhood education and nutritional status had a positive and significant effect on the cognitive development of the preschool children. Both girls and boys in the high socioeconomic status have fatter and higher values of body mass index (BMI) and percentage body fat than both girls and boys in the low socio-economic status (Özer and Özdöl, 2014) and (Ozer, Ozdol and Pinar, 2012).

Conclusions

Parenting is simultaneously associated with significant motor skills. The donation of parenting with gross motor skills of 28.5% of the gross motor skills variables is explained by parenting. Family income is associated simultaneously and significantly with gross motor skills. The contribution of family income with gross motor skills of 23.5% of the variable motor skills variables is explained by family income variables. Nutrition status is associated simultaneously and significantly with gross motor skills. Nutritional status contribution with gross motor skills of 62% of motorized motor skills variables is explained by nutritional status variables. Parenting, family income, and nutritional status are associated simultaneously and

significantly with coarse motor skills. The total relationship of 71.8% of motorized motor skills variables was explained by parenting, family income, and nutritional status; the remaining 28.2% was determined by other variables that could not be explained in this study.

Efforts to improve rugged motor skills can be done by providing regular and continuous training according to the child's age stage. If improved parenting, family income gets better and nutrient intake can be considered then the rugged motor skills will certainly increase so that the generation of healthy, intelligent and qualified generation can be achieved. Government and community attention given to the family directly will have a positive impact on family life, especially on family income and nutritional status of family members. Certainly, the improvement of living standards and family health status can be done by the government if the government establish a policy that is in favor of the interests of society, especially families with low economic status.

School should conduct regular education or education to parents in relation to a good parenting. Schools should provide facilities that can develop children's abrasive motor skills. School and government should provide nutrition-related assistance, such as regular nutrition for children on a regular basis. Governments as policymakers play an important role in improving the quality of human resources.

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