

EXAMINING THE NUTRITION LEVELS AND STUNTING PROBLEM IN INDONESIAN CHILDREN

(Kajian status gizi dan permasalahan stunting pada anak balita di Indonesia)

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ABSTRACT

Stunting is recognised as a critical issue in the developing countries like Indonesia that arises due to nutritional deficiencies. The present research paper is aimed at examining the problem of stunting among the Indonesian children of age group 0 to 5 years. Methods, qualitative study with interpretivism philosophy and descriptive research design. Data analysing is using meta-analysis method. Results, the level of nutrition among the children belonging to poor and rural families is lower as compared to the children belonging to urban and rich families in Indonesia. The key reasons behind increasing rate of stunting problem among the children are insufficient nutrition level, low paternal education and less hygienic living conditions. Conclusions, the major reason for stunting is found to be the low level of proper nutrition provision to the children of 0-5 years within Indonesia. It is proposed that proper nutrition should be provided to the Indonesian children and for this purpose, the rural and low-income families should be provided with proper education, employment and financial support.

Keywords: *Children nutrition, developing country, nutrition problem, stunting*

ABSTRAK

Stunting harus diakui sebagai masalah kritis pada negara berkembang seperti Indonesia yang muncul akibat kekurangan gizi. Penelitian bertujuan untuk meneliti masalah stunting pada anak-anak Indonesia dari kelompok umur 0 hingga 5 tahun. Metode, penelitian kualitatif dengan filosofi interpretivisme dan desain penelitian deskriptif. Analisis data menggunakan metode meta-analisis. Hasil penelitian menemukan, status gizi pada anak-anak dari keluarga miskin dan pedesaan lebih rendah dibandingkan dengan anak-anak dari keluarga perkotaan dan kaya di

Indonesia. Alasan utama dibalik meningkatnya masalah stunting di pada anak-anak adalah asupan gizi yang tidak memadai, rendahnya pendidikan orang tua dan lingkungan yang kurang higienis. Kesimpulan, alasan utama banyak stunting ditemukan karena rendahnya tingkat pemberian nutrisi yang tepat untuk anak-anak 0-5 tahun di Indonesia. Saran, nutrisi yang tepat harus diberikan kepada anak-anak Indonesia supaya permasalahan stunting teratasi, selain itu masyarakat di pedesaan dan berpenghasilan rendah harus diberikan pendidikan yang layak, pekerjaan dan dukungan ekonomi yang memadai.

Kata kunci: *Status gizi balita, masalah gizi, negara berkembang, stunting*

INTRODUCTION

Nutrition is an essential aspect that results in the enhancement of the quality of life of the children. Nutrition also determines the well-being and psychosocial stimulus. Nutrition levels and psychosocial stimulus are highly dependent on the parenting process. The efficacy of parenting determines the child development levels, eating habits together with the psychosocial stimulation. Stunting is recognised as a critical issue in the developing countries like Indonesia that arises due to nutritional deficiencies. Stunting can be understood as the height-for-age, which is defined under the standards of the World Health Organisation. It is a z-score and is identified to exist below -2.0.^{1,2} In regard to this, the current research work is planned in order to examine the stunting problem

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and nutrition levels of children in Indonesia. Indonesian children that are specifically under the age of 5 years who face nutritional and stunting problems are being examined with the help of this study.²

Since many years, the nutrition-oriented issues are identified to rise from the diet habits of the children living in developing countries like Indonesia. Significant inadequacies in the dietary patterns of the individuals comprise of dietary diversity. Dietary diversity involves plant-based sources of food. However, there exists a limited consumption of vegetables and fruits. In support of this, it can be described that from the year 1947 to 2002, the quality of diet and dietary diversity are identified to transform.^{3,4} The trend in the availability of the dietary energy has also risen in the defined years. About 7 years ago, in the year 2011, about 26% of the children were below the age of 5 years and were identified to suffer from the problem of stunting.^{5,6} Therefore, from the previous research works, it is evident that the nutritional and stunting issues are existent in developing countries and are required to be mitigated by the application of appropriate strategies.

The research is purposed to investigate and examine the levels of nutrition and problems associated with stunting in the children of Indonesia. The children who are under the age of 5 years are primarily examined in the research work. Based on this aim, the objectives of the study are outlined as defining and analysing the concept of stunting problem as well as the current nutrition level of Indonesian children; evaluating the underline reasons for stunting problem among children in Indonesia; examining the extent to which the children under five are suffering from stunting; proposing strategies to reduce stunting problem.

In accordance with the aim and objectives of the study, the question of this research is framed as, *“How the issues like stunting and nutrition have affected the growth and development of the children who are below the age of 5 years in Indonesia?”*

The research work examines the role of nutrition in the growth of the children and also helps to understand the ill effects of the stunting in the children who have not crossed the age

level of 5 years. The current research is significant in terms of identifying the concept of stunting and the reasons behind the development of stunting problem in the tender ages. Moreover, the current study is helpful in determining the nutrition and the stunting problem among the children below the age of 5 years. The previous research works are specifically carried out on an individual basis either specifically on the nutritional deficiency or the problem of stunting. However, the current research work is successful in understanding the stunting problem in the light of nutritional inadequacies. The current study encourages the researchers to identify strategies for reducing malnutrition and stunting among the children who are in their developing phases.

METHODS

Philosophy is regarded as an assistive belief through which the technique to retrieve useful information can be fetched and analysed. It is associated with the nature, sources and formulation of the required beliefs for addressing the questions of the research in an efficient manner. Interpretivism and positivism are identified as two most essentially utilised categories of research philosophy. Interpretivism philosophy is based on the concept of idealism. It also assists in combine the interests of the individuals in the research work.⁷ Different from this, positivism philosophy assist in considering the perceptions of the external world. These aspects are verified with the aid of numerical, investigational, and observational techniques. Interpretivism philosophy is applied in the research study with the alignment of the outlined aim and objectives.

The reason for applying interpretivism philosophy is that this philosophy assists in obtaining subjective interpretations from the real world regarding the malnutrition levels and stunting problems among the Indonesian children of less than 5 years of age.⁸ Furthermore, interpretivism philosophy also assists in the consolidation of existing information for conduction of the in-depth qualitative analysis for offering justification to

the research question which was not obtained through positivism.

Research design assists in the formulation of a descriptive framework, which is in alliance with the distinct research variables. Choosing an appropriate research design is essential for the research, as it assists in the collection and comprehension of the broad range of data for appropriately testing the research question. There are two classes of research designs that are termed as exploratory and descriptive. Exploratory design allows retrieving a clear perception on the developed research problem. Different from this, descriptive design assists in extending the prevalent knowledge by defining the context of the research and filling the identified gaps.⁹ In alliance with this qualitative study, descriptive research design is regarded to be appropriate for appropriate examining the nutrition intake and extent of stunting problem that is faced by the Indonesian children, specifically who are aged less than 5 years. Correct, real and organised data is acquired through this design

and large information on stunting problem is also retrieved.

Research approach assists in the selection of a logical way to offer a logical rationale for acquiring the relevant data on the research subject. The approach in research is categorised into two main aspects such as the inductive and deductive approach.¹⁰ Inductive approach is applied for the generation of new ideas and concepts. However, the deductive approach offers generalisation to the research outcomes. It allows gathering data from generalised to a specific direction with the help of hypothesis.

In terms of this research, inductive approach is applied for the formulation of the unexamined conclusion in accordance with the relevant information regarding the stunting problem and nutrition levels of Indonesian infants.¹¹ Together with this, the inductive approach is helpful in offering a supportive base to the observational and theoretic studies. A detailed insight into the stunting problem of Indonesian children is also possible with the application of this study.

Table 1. Inclusion and exclusion criteria

Criteria	Description
Time-frame	Under this particular criteria, articles which were published mainly in the previous 10 years had been selected for evaluating the stunting problem among children of year 0-5 in Indonesia. Further, articles published before 10 years were excluded because of comprising outdated data.
Keywords	For the present paper, only those articles have been included that involves specific keywords which are stunting problem, nutrition level and urban and rural families, Indonesia. It is because the articles with these keywords were supportive towards fulfilling undertaken research purpose.
Studies' Objectives	Another crucial criteria for selecting articles was the alignment of them with the specific research objectives as well as aim. Particularly those articles were chosen that are appropriate in line with the present research based objectives and aim, for fulfilling them. The articles which comprised vague data had been excluded.

In the present research, the secondary method has been adopted for collecting data. For this purpose, journals, books and research papers have been reviewed in order to obtained information regarding stunting problem and the association of it with the nutrition level of

children specifically in Indonesia. The rationale behind employing this method for the research was that it supported in collecting the significant array of relevant qualitative information that was proved to be useful for addressing the undertaken research problem.¹²

Further, the authentic and wider prospects about the causes of stunting and the extent to which the Indonesian children are suffering from this problem could be obtained with the support of relevant literature utilised for collecting secondary information for this research.

The criteria of exclusion as well as inclusion are the crucial aspects for selecting appropriate data sources that are essential for obtaining research subject relevant information. In this research's context, for examining nutrition level as well as the problem of stunting among the children of Indonesia, proper criteria of literature sources' inclusion and exclusion is determined as follows.

Prisma Chart: This chart represents the total number of records identified in the database search results that was 15. After elimination of records which were duplicated, the number of remaining records was 12. With 2 articles' exclusion, 10 articles have remained after the screening process. Finally, finding

irrelevance, 4 articles have further been removed in the final eligibility decision. Lastly, 6 articles have been approved and selected to get reviewed for present undertaken research.

The method which is helpful in synthesising comprehensive data collected from varied journals, as well as articles for addressing question framed for the research, is determined under this section.¹³ For the present paper, meta-analysis has been utilised in order to analyse or synthesis the data collected from secondary literature sources. It is the rigorous method of qualitative information analysis as it facilitates in-depth as well as encompassing details regarding the subject undertaken for the research paper.¹² In the utilisation of this particular method, relevant themes have been developed considering the objectives of the research. On the basis of specifically framed themes, a proper study has been conducted with the utilisation of selected research articles and obtained data findings for reaching logical and sensible outcomes.

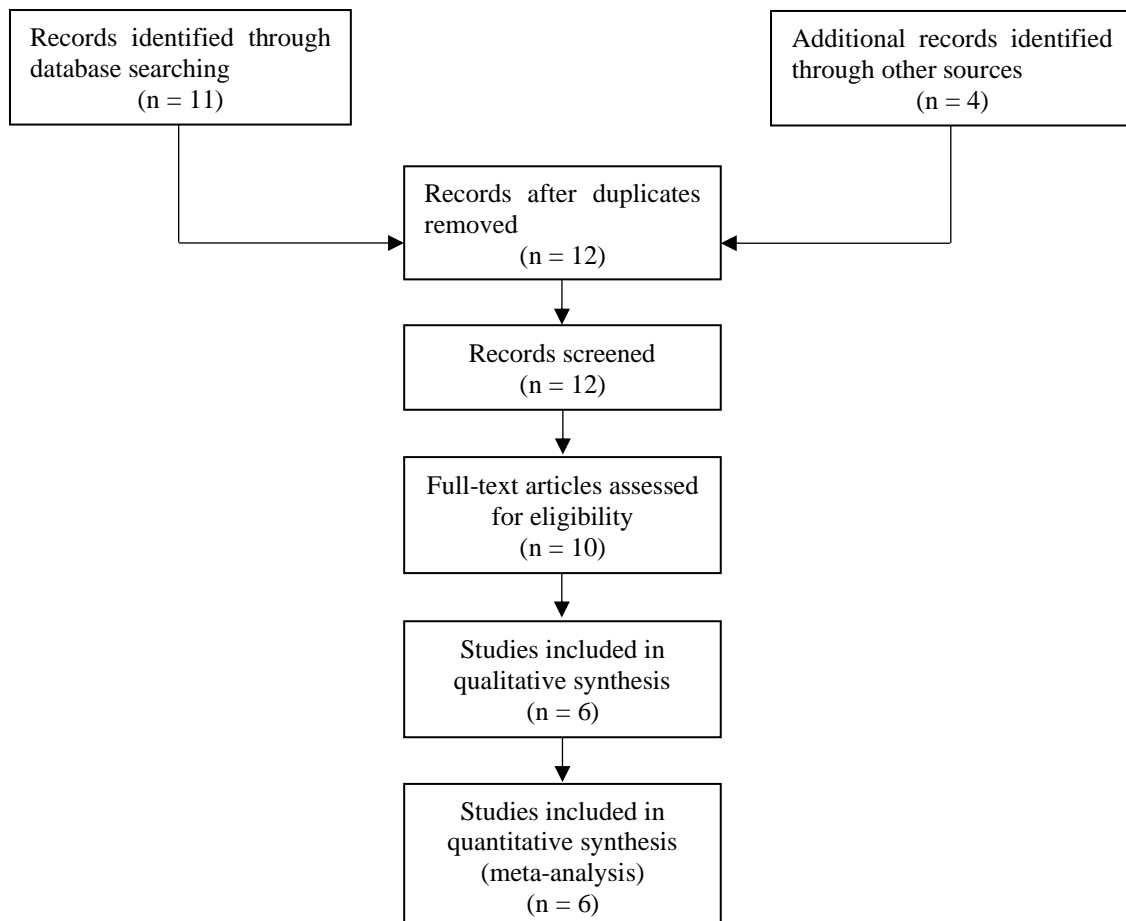


Figure 1. Prisma flow diagram

For carrying out proper research on stunting problem and level of nutrition among Indonesian children, a proper and well-determined strategy for searching terms have been utilised. The strategy emphasises potentially on specific as well as precise search keywords and terms for searching data regarding the subject of the research. These keywords or search terms refer to specific element regarding search strategy which has the vital role for obtaining useful or relevant information from existing literature sources.

For this paper, the utilised search terms are nutrition level, stunting problem as well as Indonesian children. Such specific terms supported in facilitating appropriate information

as well as minimise time consumption in sorting the adopted articles that supported in retrieving data on stunting problem among the Indonesian children.

RESULTS AND DISCUSSION

The data for present paper is analysed using meta-analysis method under which in-depth details of selected articles have been explored involving researcher's name, title, the purpose of the study, selected method, journal name as well as outcomes. Under different themes, the appropriate articles have been described that are relevant for fulfilling the objectives based on which the themes are developed.

Table 2. Result of meta-analysis

Author	Setting	Design/Method of Study	Outcome
Mahmudiono, Sumarmi and Rosenkranz (2016) ³	Rural and Urban Setting	Logistics regression methods and models	The results represented that population of Indonesia must keep the emphasis on proper child diet involving nutrients such as meat, dairy products as well as poultry as such type can prevent the issue of stunting among children of 0-5 years.
Aryastami <i>et al.</i> (2017) ¹⁴	Indonesian families	Multivariate as well as bivariate logistic regression. cross-section study	Infants who have history regarding neonatal type illness have been exposed to the risk of stunting 1,23 times more than the infants without such history. Further, poor and low birth weight children were more supposed to get stunted than children who belong to rich families and having heavy birth weight.
Semba <i>et al.</i> (2011) ¹⁵	Urban as well as Rural areas of Indonesia	Survey/cross sectional study	The fortified noodles, as well as milk's consumption, is directly connected with stunting's minimised odds among children potentially of Indonesia.
Semba <i>et al.</i> (2008) ¹⁶	Rural and Urban Setting	Multivariate logistic regression model	The outcomes of the study reflect that about 33,2 % of the families in Indonesia and the 50,7% of families in Bangladesh suffered from the problems of stunting. The proper parental education levels can reduce stunting levels among the children below 5 years in Indonesia and Bangladesh.
Best <i>et al.</i> (2008) ¹⁷	Urban as well as Rural Setting	Univariate as well as multivariate logistic regression framework	The study reveals that about 73,7 % paternal smoking prevailed in Indonesia. The findings describe that paternal smoking is the primary cause of stunting among the Indonesian children. The ratios of underweight and stunting were 29,4 per cent and 31.4 per cent respectively. The levels of extremely underweight and stunting children were respectively 5,2% and 9,1%.

Lee (2008) ¹⁸	Indonesia based families	Multilevel logistic regression models	The outcomes of the study describe that community services are responsible for bringing about 20% of deviation in the stunting levels of the children. The study reflects that the children residing in the communities were getting the drinking water from the water sources like pumps and there was the unavailability of the sewer. These children are 1,31 are more probable to suffer from stunting than the children who have better drinking water and sanitation facilities. The outcomes lay stress over the significance of clean and hygienic living conditions. It is suggested that public health programs should focus on enhancing the access to purified drinking water and clean sewerage.
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Table 3. Theme 1: Analysing concept of stunting problem and present nutrition level among Indonesia children (0-5 years)

Authors/Year	Title of the Article	Strengths	Weakness
Mahmudiono, Sumarmi and Rosenkranz (2016) ³	<i>“Household dietary diversity and child stunting in East Java, Indonesia”</i>	The study effectively explored and defined the stunting's concept and utilised Logistics regression method for identifying current nutrition level of infants of Indonesia for attaining objectives of the present paper.	There was the cross-sectional study conducted in this research which fails in inferring the casual or informal relationship between nutrition level and stunting problem.
Aryastami <i>et al.</i> (2017) ¹⁴	<i>“Low birth weight was the most dominant predictor associated with stunting among children aged”</i>	The bivariate regression helped in obtaining the level of nutrition and accordingly its impact on small children of Indonesia that supported in addressing the present undertaken objectives for the research paper.	The study is less focused on proposing interventions for improving feeding practices for children to prevent the issues of stunting.
Semba <i>et al.</i> (2011) ¹⁵	<i>“Consumption of micronutrient-fortified milk and noodles is associated with lower risk of stunting in preschool-aged children in Indonesia”</i>	The study determined effectively, the level of fortified nutrition among Indonesian children as well as the probability of stunting among children who consume and who do not consume this nutrition for attaining present paper's objectives.	The study has been limited as it is focused only on 6 to approximately 59 months' children. However, the present paper was also focused on – to 5 years children which makes this article useful for the present study.

Table 4. Theme 2: Analysing the reasons and the extent of the stunting problem and malnutrition among the children (0-5 years)

Authors/Year	Title of the Article	Strengths	Weakness
Semba <i>et al.</i> (2008) ¹⁶	<i>“Effect of parental formal education on risk of child stunting in Indonesia and Bangladesh: a cross-sectional study”</i>	The cross-sectional study was effective in the describing the reasons that fostered the growth of stunting problem among the Indonesian children lying in the age group below 5 years. The study also established interrelation between the educational levels of parents and nutrition levels of children. It is carried out in the context of two countries like Indonesia and Bangladesh.	The research was conducted with an extensive sample population which consumed a substantial amount of time. Moreover, the study applies complex multivariate regression analysis for analysing the population groups of Indonesia and Bangladesh which are complicated to be applied.
Lee (2008) ¹⁸	<i>“The effect of community water and sanitation characteristics on stunted growth among children in Indonesia”</i>	The multilevel regression assisted in determining that the sanitation and community water supplies are the main factors that enhanced the stunting problems among Indonesian children.	The study does not offer any new strategies and methods to enhance the sanitation and offering pure drinking water to the children in Indonesia.

Best <i>et al.</i> (2008) ¹⁷	“Paternal smoking and increased risk of child malnutrition among families in rural Indonesia”	The study describes the scenario of paternal smoking and also describes details regarding the risk of under-nutrition among Indonesian children which further result in stunting.	The expanse of the study is restricted as it is focused on determining the ill-effects of paternal smoking on the children and its role in enhancing stunting problem.
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According to Aryastami *et al.*¹⁴ stunting refers to the extremely prevalent problem among the young children that is concerned with the high level of mortality as well as morbidity. Stunting among children of year 0-5 is observed to be common as a malnutrition chronic type problem. Stunting is mainly associated with some internal factors such as maternal health and well-being as well as external factors, for instance, community's socio-economics, feeding practices, nutrition level and illness. The study adopted the method of retrieving data from existing Indonesian health survey that was conducted with 3024 children of age group 12 to 23 months and revealed that the stunting problem's concept is directly linked to the level of nutrition, feeding practices and birth time weight of the children.

Another cross-section study of Mahmudiono *et al.*³ have been carried out in 8 different Indonesian districts that provided relation between child stunting as well as dietary diversity that improper diet and lack of nutrition such as protein and calcium tend to increase the possibility of stunting among the young children of age 0 to 5 years old. The study further revealed that stunting is a clear indication that an infant or child is not able to thrive. The problem of stunting is concerned directly with diminished brain ability, underdeveloped mind, long-lasting noxious results such as poor learning ability as well as inadequate performance in school. The study also explored with supported findings that stunting in childhood further results in chronic diseases that are related to nutrition, for instance, hypertension, diabetes as well as obesity.

One of the studies of Semba *et al.*¹⁵ determined that due to poor nutrition level, the linear growth of children tends to get hampered that is known as stunting problem. The study

adopted a survey with 222,250 rural families as well as 79940 urban families of Indonesia for assessing nutrition level of up to 5 years children of urban and rural Indonesian families. The outcomes of the study revealed that 34% of rural families' children used to consume fortified milk as a means of nutrition. Further, 42.4% children of urban families used to consume this milk. The outcomes of this study reflected if the rural, as well as urban families of Indonesia, feed their children with fortified milk properly in the early age, the problem of stunting is less supposed to be seen among them. However, the study lacks in identifying the level of breast milk feeding as nutrition for analysing its association with the stunting problem. The gap is overcome by another study by Aryastami *et al.*¹⁴ This study took the support of a recent survey of Indonesian basic health with approximately 3024 children and provided results that only 19.7% of overall Indonesian babies have experienced exclusive type breastfeeding. Thus, this is another essential issue related to low nutrition level resulting in the growth rate of stunting problem among Indonesian children. Further, the study also represented that children born with low weight are approximately 1.74 times higher probability of getting stunted as compared to the children who have taken birth with normal expected weight.¹⁴

In the perspectives of Semba *et al.*, it can be understood that chronic intake of the low quality of diet is amongst the major reasons behind child stunting. Other reasons for stunting problem are high morbidity, environmental issues, and infectious diseases. The findings from the study reflect that the education levels of the parents are highly effective in safeguarding the health and nutritional levels of their children in

comparison to the guardians who are less educated.¹⁶

In contrary to it, the former study by Best *et al.*, has also described that high paternal smoking levels such as the 73.7% are a potential determinant of stunting and malnutrition. The findings are gathered from the sample of 438, 336 families in Indonesia by means of Indonesian Nutritional Surveillance System (NSS). The study reflects that paternal smoking is more potential and conformable reason for malnutrition and child stunting.¹⁷

Different from this, the study carried out by Semba *et al.*¹⁶, is primarily focussed on analysing the impact of the parents' education level over stunting in children aged below 5 years. The study incorporates an observational method like surveillance programme termed as NSS, as an effective tool for gathering information related to growth levels of the children, education levels of parents and their socio-economic state. About 590, 570 Indonesian households and 395, 122 Bangladeshi households were observed during the research. However, the observation method was highly time-consuming due to the involvement of an immensely large population. A large number of families provided useful data but a sufficient amount of time was required to accomplish the study.

Therefore, different from the above, the study of Lee in 2008 applied a survey method for identifying the reasons for stunting among the Indonesian children, aged less than 5 years. The application of a longitudinal survey termed as Indonesia Family Life Survey (IFLS) executed in the year 1997 and 2000 was carried out with a sample size of 4,129 children below the age of 10 years. Statistical analysis was incorporated for analysing the obtained data with the application of the model named as multilevel logistic regression.¹⁸ Findings reveal that stunting is dependent on the sanitation and community water facilities. The study conducted by Semba *et al.* utilises an observational surveillance method, to retrieve useful information from about 590,570 households in Indonesia. This study is capable of obtaining the proper knowledge regarding the levels of child stunting in the Indonesian

regions. This study describes that Indonesian children faced about 33.2% of stunting problem. The study also reflects that an increment was identified in child stunting with the increment in ages of both the mother and the child. The NSS programme also described that the level of child stunting relied on the educational levels of the parents. In the developing countries like Indonesia and Bangladesh, the areas where high maternal educational levels were observed the level of child stunting was identified to be reduced.¹⁶

However, in the regions where child stunting was high, the educational levels of the parents were identified to reduce. Therefore, there exists an interrelationship between the educational levels of the parents and the stunting levels of the children. With the help of this study, it is evident that formal education levels were identified to exist at a degraded level. Educational levels were degraded to 4.4% and 5%.¹⁶ In contrast to the studies of Lee in 2008 and Best *et al.* in 2008, the study carried out by Semba *et al.* (2008) is quite advanced and has incorporated a comparatively larger sample size. The surveillance programmes incorporated in the study are highly efficient in the generation of relative views regarding the state of stunting problems in Indonesian children.^{16,17}

CONCLUSION

It is concluded by analysing the data findings that stunting is a common issue among the children of year 0-5 years who are malnutrition. The stunting problem has been understood as the failure of children in thriving which is resultant of the improper development of the brain. The stunting problem develops various symptoms among the children such as inadequate capabilities of learning, poor mental and brain abilities as well as harmful results throughout the life of children such as improper growth. In specific to the Indonesian region, the problem of stunting has been observed as the most prominent among children of 0-5 years age group.

It was observed that there are the different level of nutrition among rural as well as urban

families' children. The children belong to urban and rich families in Indonesia have been less affected by the stunting issue in comparison with rural as well as poor children because of the low level of nutrition among poor children. It has further been obtained that fortified food such as noodles and milk are more consumed by 0-5 years old children of urban Indonesian families than poor rural families' children, therefore, the low level of stunting has been observed among urban families' children in the country.

The major reason for stunting is found to be the low level of proper nutrition provision to the children of 0-5 years within Indonesia. The low feeding of breast milk, fortified food and other nutrition rich diet are found to be the core reason for stunting problem among infants or 0-5 years children within Indonesian regions. Further, it is also retrieved that stunting problem has been identified to a high extent among the Indonesian children of 0 to 5 years who born with low body weight, belong to rural and poor families and who had the low level of nutrition rich diet. Thus, overall, it is concluded that stunting is a huge problem among infants that can be resolved with the provision of proper nutrition to the children.

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