CONTRIBUTING FACTORS OF STUNTED GROWTH AMONG TODDLERS IN MAKASSAR CITY: A QUALITATIVE STUDY

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Abstract

Introduction: The prevalence of stunted toddlers in Indonesia is close to 9 million. Other than the importance of food intake as the cause of the stunting, types of feeding practices, infections, poor socio-economic status, and low healthcare are also among the contributors. The objective of this study is to describe the feeding practices, the history of the disease and the socio-economic conditions of stunted toddlers in South Sulawesi, in particular, Makassar City.

Materials and Methods: An in-depth interview was conducted with the mothers of 72 toddlers who had been identified as stunted.

Results: It was found that majority of the stunted toddlers (59.7%) had been introduced to complementary foods earlier than it should be. About 70.8% had been infected with acute respiratory infection (ARI), and diarrhoea with majority of the affected toddlers being from the low income socio-economic status.

Conclusion: There are many factors that contribute to the toddlers' stunted growth, and some possibilities to overcome this are to improve the socio-economic status of the families and for the authorities to introduce health education throughout the community.

Keywords: *Stunted growth, Toddlers, Feeding practices, Infectious diseases, Socio-economic status*

Introduction

One of the health problems related to growth and development among children less than five years of age which can cause adverse effects in the short and long term is stunting. Stunting is a chronic nutritional problem in toddlers. It is characterized by shorter heights compared to their age (1). Stunting shows restrictions on the potential growth of these children (2).

Stunting in children can occur in the first 1000 days after conception, and it is associated with many factors, including socio-economic status, food intake, infections, maternal nutritional status, infectious diseases, micronutrients, and environmental deficiencies (2,3). The first 1000 days of life, called the opportunity window or the "window of opportunity" which starts from conception to the second birthday, is generally considered as important periods for prevent stunting (4–6). Stunted children are common among the socio-economic disadvantaged population group. They are also more likely to perform poorly in school, be among the low income group in adulthood, and are

contributory to the transmission of intergenerational poverty and inequality among the low income groups (7,8).

Across the world, reports in 2017 noted that 22.2% or 150.8 million children under the age of five had suffered from stunting (9). Although this number has decreased compared to the stunting rate in 2000, which was 32.6%, the figure is still considered to be very high. In the same year of 2017, more than half of the stunting toddlers (55%) in the world were identified to be from Asia while more than a third (39%) lived in Africa. Of the 83.6 million stunted children prevalent in Asia, the largest proportion (58.7%) was from South Asia while the lowest (0.9%) came from Central Asia *(1).*

Around 37% (9 million) of the children born in Indonesia suffer from stunting, ranked fourth in the world, after India, Pakistan and Nigeria (10). The World Health Organization (WHO) had reported that as a third world country, Indonesia has the highest prevalence in the South-East Asian Region (SEAR). The average incidence of stunted toddlers in Indonesia between 2005-2017 was 36.4% (1).

Results of the Basic Health Research (Riskesdas) of 2018 showed that South Sulawesi ranked fourth as a province with the highest stunting incidence after Nusa Tenggara Timur, Sulawesi Barat, and Aceh (11). Therefore, this study aims to describe the feeding practices, the history of the disease and the socio-economic conditions of stunted toddlers in Makassar City of Sulawesi Selatan. The justification for this selection was based on the demographic and socio-cultural characteristics of Makassar City which are similar to other districts in Sulawesi Selatan of Indonesia.

Materials and Methods

This study is qualitative in nature. It focuses on an in-depth interview with 72 women who were mothers of 72 stunted toddlers. They were interviewed at their convenient time, upon obtaining their consent. The interview was conducted between February and April 2018. Saturation was achieved before it ended with the eight mothers. All the interviews were recorded electronically and transcribed verbatim. The data were then analysed via content analysis to develop relevant themes. The type of feeding practices was grouped into pre lacteal (food or drink given to babies before breast milk comes out, such as formula milk, honey, drinking water and others), giving of colostrum (breastfeeding), and providing complementary food before the baby reached six months of age.

Results

Table 1 illustrates the characteristics of the stunted toddler in terms of gender and age. Majority were males (51.4%). The age distribution showed the proportion (25%) to be those aged 24 to 28 months.

Table 1: Gender and Age of Cases

Variable	Frequency (n)	Percent (%)
Toddler's Gender (n=72)		
Male	37	51.4
Female	35	48.6
Toddler's Age (Months) (n=72)		
24-28	18	25.0
29-33	16	22.2
34-38	9	12.5
39-43	3	4.2
44-48	10	13.9
49-53	7	9.7
54-59	9	12.5

Table 2 highlights the distribution of the cases based on some identified factors which encompassed feeding practices, past history of diseases, source of drinking water and socio-economic status.

Table 2: Distribution of the Cases according to several Identified Factors

Factor	Indicators	Frequency (n)	Percent (%)
Feeding practices (can be more than 1 practices) (n=72)	Pre-lacteal feeding	15	20.8
	Getting colostrum	60	83.3
	Provide complementary food before the baby reached 6 months of age	43	59.7
Past History of Disease (in the last 3 months)(n=72)	No Infectious Disease	21	29.2
	DHF	1	1.4
	Measles	2	2.8
	Typhoid	2	2.8
	Diarrhoea	17	23.6
	ARI	20	27.8
	Diarrhoea and ARI	9	12.5
Source of Drinking Water (n=72)	Local water company Neighbour's	11	15.8
	packing water	22	30.0
	Well Water	6	8.4
	Gallon Water	33	45.8
Socio-economic status (n=72)	Mother's Education		75.0
	Low (lower than high school)	54	25.0
	High (high school and higher)	18	
	Mother's Employment		90.3
	Does not work	65	9.7
	Work	7	
	Father's Employment (n=72)		55.6
	Labor	40	11.1
	Services	8	33.3
	Enterpneur	24	
	Household's Income per Month (n=72)*		66.7
	Low (less than IDR 2,700,000)**	48	33.3
	High (IDR 2,700,000 and higher)	24	

*IDR=Indonesian Rupiah (1 IDR=0.000072 USD on 28 February 2018)

** Regional Minimum Wage : IDR 2,700,000

Feeding Practices

It can be noted from Table 2 that 43/72 (59.7%) of the stunted toddlers were given complementary foods before they had reached six months of age. There was no definitive answer as to why the mothers started feeding the child earlier than six months old but the excerpts below display what the mothers said: *"I gave complementary food to my baby at the age of 5 months, because when I try the child likes and eats the food"* (25 years old)

Mothers who failed to give exclusive breastfeeding also had several reasons:
"I gave water to my baby because of my lack of breast milk causing the child kept crying" (45 years old)

"My baby didn't get colostrum because when he was born he was put in the incubator" (30 years old)

From the interviews, some unhealthy eating practices were detected.
"My child is lazy to eat rice because of frequent snacks such as crackers, tea cups, jelly, instant noodles" (37 years old)

"My child drinks sweetened condensed milk, because I can't afford formula milk" (20 years old).

Past history of diseases

It can be seen from Table 2 that 70.8% of the stunted toddlers had experienced infectious diseases such as Dengue Hemorrhagic Fever, diarrhea, Acute Respiratory Infection, and typhoid. The most common infectious diseases which had affected the toddlers during the last three months were diarrhoea and Acute Respiratory Infection. However, most of the mothers could not explain the cause of the diarrhea.

"In the last 3 months, my child was hospitalized because of diarrhea and continued to be weak so I took him to the hospital" (43 years old).

Source of Drinking Water

From the interview conducted, it appears that 45.8% of the households with stunted children had used gallon water (water collected from the water depots) for drinking. This was for convenience and financial reasons.

"I consume gallon water for drinking because it is cheap and easy to obtain than cooking water" (25 years old).

Socio-economic status

In this study, the education level of the mothers, the employment status of the parents, and the households' income were used to indicate the socio-economic status of the families. Household income was only obtained from the father's income because most mothers (90.3%) were unemployed. Majority (75%) of the mothers had low education. Most of the toddler's family (66.7%) had income below the regional minimum wage of 1.5 to 2 million Rupiah per month. Inevitably, this had contributed to the poor diet provided to the toddlers.

"My husband has only odd jobs, his salary is Rp 1.6 million ($ 110) a month so my child rarely get protein for example beef, fish" (27 years old).

Discussion

Feeding babies and children with adequate food is an important foundation that helped in the children's growth process(12). Reports had indicated that around 30% of those children under five years old throughout the world were stunted due to poor feeding, and recurrent infections. It is believed that the mothers can change this phenomenon through a number of ways, such as developing proper behavior during breastfeeding or feeding practices, practising healthy eating, using and consuming nutritious foods, and controlling the portions consumed (13). This study had revealed that the feeding practices implemented by the toddlers' mothers were incorrect right from the moment after birth. It is deduced that this could have contributed to their children's stunted growth.

Malnutrition in childhood has a potential risk on stunting and malnutrition can be begin from the child's nutrition history (breastfeed or otherwise, age of weaning - full cessation of breastfeeding, and age of starting on complementary foods - less or equal to/more than 6 months) (14). Several studies have shown that children who were not fed with complementary foods at 6-8 months were three times more likely of being severely stunted than children who were fed complementary foods (15). However, in this study, we found that about 60% of the stunted children had been given complementary foods earlier than they should. This showed that the quality of the complementary foods may also be important. Poor quality foods include poor micronutrients, which lack diversity. They also include food intake sourced from animal foods, non-nutritious ingredients, and low energy contents considered as complementary foods (5).

This study had also found that some stunted toddlers refused to eat rice because they were taking frequent snacks such as crackers, tea cups, jelly, or instant noodles. Some were also consuming sweetened condensed milk which are unhealthy. This study also found that there were inadequate feeding practices which encompassed rare feeding occasions, inadequate feedings during and after illnesses, too little food consistency, insufficient quantity of food, and unresponsive feedings. Recent analysis showed that households that applied a diverse diet, including a diet enriched with complementary nutrients were likely to increase their nutrient intakes thereby reducing the risk of stunting. Evidence showed that providing a variety of diets that comprised food from animal sources was associated with improved linear growth (16,17). A study had also reported that children who were breast fed for <6 months were more likely to develop stunting than children who were exclusively breast fed for the first 6 months (18). The promotion of effective breastfeeding during the first 6 months (critical for survival and the foundation of healthy growth in early infancy) and continued breastfeeding (to age 2 years or beyond) is important (19). In this study, we did not confirm the duration of the breast feeding, but the fact that most of the toddlers had been introduced to solid foods earlier than necessary implied that breast feeding practices were less than expected.

This study had also shown that most of the stunted toddlers had infectious diseases for the past three months. Infectious diseases such as diarrhea and ARI have an impact on the nutritional status of infants, especially if these occur frequently over a long duration of time. Toddlers with poor nutritional status would have a low immune system which can make them susceptible to infections (20,21). This study had also revealed that the source of the toddlers' drinking water was from the gallon water which was not guaranteed to be clean, and which carry high risks of the prevalence of diarrhea. Linked to this is the environmental hygiene, and sanitation practices, especially in developing countries, which may contribute to malnutrition, hence impact on stunting (20) . These factors, however, were not determined from the interviews.

Some of the findings obtained in this study are consistent with previous studies such as McGregor S (22), and Takanashi (20) who had mentioned that poverty is associated with inadequate food, poor sanitation and hygiene which contribute to increased infections causing stunting in children. This vicious cycle goes on since poverty is also associated with poor maternal education, and poor knowledge of proper feeding practices for their children. In this study, majority of the toddler's parents were from the low socio-economic status, making them more vulnerable and ignorant of the proper diet for their children, and their lack of means to provide nutritious food to their children.

Conclusion

This study had highlighted several factors which have been identified as possible contributors to stunting among toddlers in the Makassar City of South Sulawesi, Indonesia. These factors encompass the early introduction of complementary foods, the prevalence of infectious diseases (diarrhoea

and ARI), the consumption of the gallon water, the family's low socio-economic status and the mothers' low understanding of caring for their children. These factors can be considered as variables for a quantitative study which can be conducted so as to determine their associations with stunting. It is recommended that the authorities make efforts to not only educate parents on proper feeding practices but also to provide good nutritious food to their children. It is necessary for the government to improve the socio-economic status of these families by firstly providing them with basic household necessities such as treated water supply and proper sanitation and possibly to hold basic health education for the community.

Acknowledgment

This paper has been presented at the APACPH KL "Early Career Global Public Health Conference, Kuala Lumpur, 11-12 April 2019. We convey our gratitude to the Faculty of Medicine, University of Malaya, Malaysia for its support.

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