



The Relationship Between Food Consumption Diversity and Maternal Parenting Patterns with Stunting in Toddlers

Noni Humaira¹, Vaulinne Basyir², Arni Amir³, Delmi Sulastr⁴, Mayetti⁵, Yusrawati⁶

¹Midwifery Study Program, Master Program, Faculty of Medicine, Universitas Andalas, Padang, Indonesia

^{2,6}Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Andalas, Padang, Indonesia

³Department of Biology, Faculty of Medicine, Universitas Andalas, Padang, Indonesia

⁴Department of Nutrition, Public Health Sciences, Universitas Andalas, Padang, Indonesia

⁵Paediatrics, Faculty of Medicine, Universitas Andalas, Padang, Indonesia

Email corespondensi : vaulinne@gmail.com

<p>Track Record Article</p> <p>Accepted: 16 March 2023 Revised: 29 March 2023 Published: 22 June 2023</p> <p>How to cite : Humaira, N., Basyir, V., Amir, A., Sulastr⁴, D., Mayetti, & Yusrawati. (2023). The Relationship Between Food Consumption Diversity and Maternal Parenting Patterns with Stunting in Toddlers. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 5(2), 585-600</p>	<p style="text-align: center;">Abstract</p> <p><i>Stunting is malnutrition in toddlers, especially in the first 1000 days of life, which causes stunted physical growth and susceptibility to disease. Stunting is one of Sustainable Development Goals (SDGs) targets in the 2nd sustainable development goal with the target set is to reduce the stunting rate by 40% in the year 2025. According to Minister of National Development Planning (2020), Padang is one of cities for integrated stunting reduction interventions in 2021. The highest prevalence of stunting in Padang Selatan District occurred in Seberang Padang Health Center working area, which is 16.4%. In 2021, the prevalence of stunting in the Puskesmas Seberang Padang working area increased to 17.8% of the total 590 toddlers whose height was measured. This study aims to determine the relationship between food consumption diversity and maternal parenting with the incidence of toddlers' stunting in the working area of Puskesmas Seberang Padang. This research was conducted by observational study using cross-sectional design. The study population was all toddlers in Seberang Padang Health Center's work area with sample of 179 respondents using proportional sampling as sampling technique and collected by questionnaire. The result showed that food consumption diversity ($p=0.000$), food parenting ($p=0.000$), hygiene parenting ($p=0.026$), health parenting ($p=0.018$) and psychosocial stimulation parenting ($p=0.031$) have significant relationship with the incidence of stunting. The most dominant factor is food consumption diversity ($OR=24,263$). The conclusion of this study is that there is significant relationship between the diversity of food consumption, food parenting, hygiene parenting, health parenting and psychosocial stimulation parenting with the incidence of stunting and the most dominant factor is the diversity of food consumption.</i></p> <p>Keywords: <i>Food consumption diversity, Maternal parenting pattern, Stunting</i></p>
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INTRODUCTION

Stunting is one of Sustainable Development Goals (SDGs) targets in the 2nd sustainable development goal, the target set is to reduce the stunting rate by 40% in the year 2025 (Kemenkes RI, 2018a). The global prevalence of stunting is 21.3% or around 144 million toddlers, with more than half coming from Asia at around 54% (UNICEF, 2020). In 2020, global prevalence of stunting is 22% or around 149.2 million children under the age of five

with the highest prevalence found in the Southeast Asia Region, with Timor Leste at 48.8% and Indonesia in second place with stunting prevalence of 31.8% (UNICEF, 2021).

West Sumatra is one of provinces with high prevalence of stunting in 2018 which reached 30.6% (Kemenkes RI, 2018b). Padang is one of focus locations for integrated stunting reduction intervention in 2021. In the year 2020, there were still 2,943 toddlers in Padang suffering from stunting with the highest prevalence of stunting was recorded in Padang Selatan District, more precisely in Seberang Padang Health Center's working area, which reported at 16.4%. In 2021, the prevalence of stunting in Puskesmas Seberang Padang's working area increased to 17.8% of the total 590 toddlers whose height was measured (Dinas Kesehatan Kota Padang, 2020; Puskesmas Seberang Padang, 2022).

The causes of stunting are categorized into two, direct and indirect causes. Direct causes include nutritional status problems due to low nutrient intake and health problems, both of which influence each other (Atikah, 2018). Inadequate nutritional intake is one of direct causes of stunting. To measure the quality of food consumption, Individual Dietary Diversity Score (IDDS) can be used, which is a qualitative measure that reflects the diversity of individual food consumption (Food and Agriculture Organization of the United Nations, 2013; UNICEF, 2013). Parenting patterns is one of factors that can directly affect nutritional status. Parenting patterns of toddlers is manifested in several things such as food parenting, hygiene parenting, health parenting and psychosocial stimulation parenting (Bella & Fajar, 2019).

Based on preliminary studies conducted on 10 toddlers in the working area of Puskesmas Seberang Padang, it was found that 6 of them were stunted toddlers aged 24-59 months. After interviews with mothers of toddlers, 8 out of 10 mothers of toddlers do not know and tend not to pay too much attention to the nutrients needed for the growth and development of their children as evidenced by children not eating a diverse diet (toddlers consume < 4 food groups per day). The food most often consumed every day is omelet with white rice only or fried fish with white rice only, 7 out of 10 children under five rarely consume vegetables.

Most children are cared for by their mothers, 7 out of 10 mothers of children under five give birth normally, but all mothers do not initiate early breastfeeding for their children. Before breast milk/colostrum was released, mothers had already given formula milk to toddler. All mothers did not routinely provide food with balanced nutritional menu and the child's food was also not always consumed by toddler. There were 2 toddlers who did not have basic immunization and 4 toddlers with incomplete basic immunization. All toddler homes already have latrines but 6 of them have low availability of clean water and poor environmental sanitation. Therefore the authors are interested in conducting research on the relationship

between diversity of food consumption and maternal parenting with the incidence of stunting in toddlers in the working area of Puskesmas Seberang Padang, Padang.

METHODS

This study was an observational analytic study using a cross-sectional design. This study aims to determine the relationship between food consumption diversity and maternal parenting with the incidence of toddlers' stunting in the working area of Puskesmas Seberang Padang. The research conducted from April to June 2022. The population in this study were all toddlers in the working area of Puskesmas Seberang Padang, Padang. The total population was 590 toddlers. The sample size uses the Lameslhow formula for an error rate of 5% :

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} \cdot P(1-P) \cdot N}{d^2 \cdot (N-1) + Z^2_{1-\frac{\alpha}{2}} \cdot P(1-P)} \quad (1)$$

$$n = \frac{1,96^2 \cdot 0,178(1-0,178) \cdot 590}{0,05^2(590-1) + 1,96^2 \cdot 0,178(1-0,178)} = \frac{331,63}{1,4725 + 0,5620} = 163$$

Based on the results of above calculations, the minimum sample for this study was 163 people. Researchers try to anticipate if the selected subjects are not willing to participate in the study, it is necessary to make corrections to the calculated sample size so that the research precision is maintained. The estimated non-response rate is 10%. The total sample obtained was 179 toddlers.

This study took inclusion criteria, namely toddlers aged 24-59 months in the working area of Puskesmas Seberang Padang and cared for by mothers while the exclusion criteria were toddlers who suffered from physical disabilities, mental disorders and congenital diseases and toddlers were not at home when the study was conducted.

The sampling technique used proportional sampling technique. Puskesmas Seberang Padang has 4 villages. The selection of research samples was taken from each village by proportional allocation. The instruments used in quantitative research are microtoise to measure toddler height, 24-hour Food Recall to measure food consumption diversity variables, based on Guildlines for measuring household and individual dietary diversity 16 food groups will be categorized into 9 food groups. Structured questionnaires were used to measure the variables of food parenting, hygiene parenting, health parenting and psychosocial stimulation parenting.

The analysis of research data was carried out by univariate analysis, bivariate analysis with Chi-Square statistical test with 95% confidence degree ($\alpha = 0.05$), multivariate analysis

was carried out using logistic regression analysis with the size of the association Adjusted Prevalence Ratio (PR) and then the meaning was assessed using 95% CI and p value <0.05. Processing of data was computerized using SPSS.

RESULTS

Respondents in this study were all toddlers in the working area of Puskesmas Seberang Padang. There were 179 respondents who met the inclusion and exclusion criteria.

Table 1 Frequency Distribution of Stunting in Toddlers

Frequency Distribution of Stunting Incidence	f	%
Stunting	81	45,3
Normal	98	54,7
Total	179	100

Table 1 shows that more than half of the respondents in this study were normal toddlers according to body length/age, which was 54.7% (98 people).

Table 2 The Relationship between Food Consumption Diversity and Maternal Parenting with the Incidence of Stunting

Variable	Incidence of Stunting				<i>p-value</i>
	Stunting		Normal		
	n	%	n	%	
Food Consumption Diversity					
Not Diverse	66	83,5	13	16,5	<0,001
Diverse	15	15	85	85	
Food Parenting					
Poor	66	61,1	42	38,9	<0,001
Good	15	21,1	56	78,9	
Hygiene parenting					
Poor	38	56,7	29	43,3	0,026
Good	43	38,4	69	61,6	
Health Parenting					
Poor	45	55,6	36	44,4	0,018
Good	36	36,7	62	63,3	
Psychosocial Stimulation Parenting					
Poor	52	53,1	46	46,9	0,031
Good	29	35,8	52	64,2	

Table 2 shows the relationship between the diversity of food consumption ($p < 0.001$), food parenting ($p < 0.001$), hygiene parenting ($p = 0.026$), health parenting ($p = 0.018$) and psychosocial stimulation parenting ($p = 0.031$) with the incidence of stunting with p value <0.05. It can be concluded that there is significant relationship between the diversity of food consumption, food parenting, hygiene parenting, health parenting and psychosocial stimulation parenting with the incidence of stunting in the working area of Puskesmas Seberang Padang.

Table 3 Multivariate Analysis

Variabel	<i>p-value</i>	OR	95% CI
Food Consumption Diversity	<0,001	24,263	10,492-56,108
Food Parenting	<0,001	4,098	1,693-9,917
<i>Constant</i>	<0,001	0,129	

Table 3 shows the most dominant factor associated with the incidence of stunting is the diversity of food consumption with p value <0.001 ($p < 0.05$) and OR value 24,263.

DISCUSSION

Relationship between Food Consumption Diversity and the Incidence of Stunting

Based on the results of the study, it can be concluded that there is significant relationship between the diversity of food consumption and the incidence of stunting in toddlers. The results of multivariate analysis showed that the food consumption diversity variable had the highest OR value at 23.941, meaning that the lack of food consumption diversity had a risk of 23.941 times causing stunting in toddlers. Malnutrition is a problem that most often occurs in toddlers. Food diversity is one of the factors that can determine the quality of food consumed. The diversity of the types of food consumed can affect the completeness of the quality and quality of nutrients absorbed and used by the body. Toddlers whose daily food consumption is not diverse are at risk of malnutrition such as stunting because important nutrients for the body are not fulfilled (Noflidaputri & Febriyeni, 2020).

This study is in line with research in Rwanda found that low diversity of food available in rural markets is one of factors for the incidence of stunting in toddlers (Weatherspoon et al., 2019). The same results were also found in Suryawan, et al's research which showed that toddlers who had normal nutritional status mostly had a diverse category of food diversity scores (Suryawan et al., 2022). Handriyanti and Fitriani's research also gave the same results, namely toddlers with low food diversity scores were more at risk of stunting (Handriyanti & Fitriani, 2021)

Research by Kamila, et al. gave different results, which stated that there was no significant relationship between the diversity of food consumption and the incidence of stunting (Kamila et al., 2022). According to Trisasmitha, et al, one of the efforts in reducing the risk of stunting in children is to provide a variety of foods at least four groups of food types a day (Trisasmitha et al., 2020). According to Sie, et al in a study in West Africa found that toddlers who have high food consumption diversity scores have insignificantly higher height

for age and weight for age. Although insignificant, toddlers who have higher food consumption diversity scores have reduced the risk of stunting and underweight (Sié et al., 2018)

In this study, it was found that the highest food group consumed by toddlers was starchy foods. In line with Astuti and Sumarni's research, it was found that stunting toddlers consumed more starchy food groups than other types of food groups (Astuti & Sumarni, 2020). This is reinforced by research conducted by Istiaque, et al in Bangladesh showing that micronutrient intake in stunted children is much lower than the specified nutritional adequacy (Istiaque et al., 2018). Astuti and Sumarni's research also shows that stunting toddlers consume more starchy food groups than other types of food groups (Astuti & Sumarni, 2020). Research by Alfiah, et al showed that toddlers with low animal protein intake had a 9 times chance of experiencing stunting (Afiah et al., 2020).

According to the researcher's assumption, the quality of toddler food intake is characterized by a variety of types of food consumed, the more diverse the food consumed, the important nutrients for toddlers' needs will be fulfilled to support the growth and development process of toddlers because basically no type of food has complete nutritional content both in quantity and type. Stunted toddlers who experience non-optimal growth are due to a lack of single nutrients and some combined nutrients obtained from various types of food groups. Therefore, it is expected that mothers increase the diversity of toddler food consumption both in terms of the type of food eaten and the amount and frequency of meals so that toddlers get balanced nutrition and it is also expected that health workers can increase promotive and preventive efforts in preventing stunting through cooperation with families of toddlers to increase toddler food consumption.

The Relationship between Food Parenting and the Incidence of Stunting

Based on the results of the study, it can be concluded that there is a significant relationship between food parenting and the incidence of stunting in toddlers. Poor food parenting is more common among stunted toddlers. Food parenting is an important indicator in the growth process of toddlers because if eating parenting is not good, it results in toddlers lacking important nutrients so that it can hamper the growth of toddlers (Idris, 2022; Amri et al., 2023).

Food parenting is one of the important indicators in the growth process of toddlers because if eating parenting is not good, it causes toddlers to lack important nutrients so that it can hamper their growth. Good eating parenting can be in the form of providing nutritious food according to the age and needs of toddlers by paying attention to the quality and quantity of

food, the mother must be sensitive in knowing when the child wants to eat, the mother's efforts in creating a comfortable eating atmosphere for toddlers and paying attention to the toddler's appetite (Alifariki, 2020).

In line with research by Noftalina, et al. explained that toddlers with poor food parenting had a 4.929 times chance of experiencing stunting compared to toddlers with good food parenting (Noftalina et al., 2019). Research conducted in Zambia explains that mothers who pay attention to the frequency of children's meals, the type of meal and are responsive to children's desire to eat are proven to reduce the risk of malnutrition in children, especially stunting (Mugode et al., 2018). Research conducted by Gurang, et al which showed that there was a significant relationship between parenting and the incidence of stunting (Gurang et al., 2023).

Novitasari and Wanda in their research gave different results, namely that there was no significant relationship between maternal feeding practices and the incidence of stunting in toddlers because most mothers were not responsive in feeding toddlers, namely without paying attention to signs of when the toddler was hungry and full (Novitasari & Wanda, 2020). Research by Adha, et al also explained that there was no relationship between feeding practices and the incidence of stunting in toddlers (Adha et al., 2021). However, according to research conducted by Mugode, et al in Zambia explained that mothers who pay attention to the frequency of children's meals, the type of meal and are responsive to children's desire to eat are proven to reduce the risk of malnutrition in children, especially stunting (Mugode et al., 2018).

According to researchers' assumptions, food parenting is one of the important foundations in the growth process of toddlers. This study shows that poor food parenting is more common among stunted toddlers. This is because stunted toddlers do not get a balanced nutritional intake both in terms of quality and quantity of food which cumulatively results in impaired toddler growth, namely stunting, so it is expected that mothers maintain a regular toddler diet 3 times a day and make efforts so that toddlers are interested in spending their food such as making creations in toddler food and inviting toddlers to eat together with friends their age.

The Relationship between Hygiene Parenting and the Incidence of Stunting

Based on the results of the study, it can be concluded that there is a significant relationship between hygiene parenting and the incidence of stunting in toddlers. The majority of poor hygiene parenting is obtained by stunting toddlers. In this study, the majority of poor hygiene parenting was obtained by stunting toddlers. This is because from the results of

interviews most mothers do not accustom children to washing hands with soap before and after eating, do not accustom toddlers to brush their teeth 2 times a day, and do not cut toddlers' nails regularly 1 time a week. According to Sutarto, et al, mothers who provide poor hygiene parenting to toddlers will have a negative effect on toddler health, and vice versa mothers who provide good health parenting will have a positive impact on toddler growth and can reduce the risk of stunting (Sutarto et al., 2021).

Hygiene parenting is the mother's action in maintaining cleanliness and health to realize physical and psychological well-being for toddlers. Maintaining personal hygiene is very important, for that mothers need to teach personal hygiene to toddlers as early as possible because health problems due to lack of personal hygiene often occur at the age of toddlers (Mangesa, 2012).

Research conducted by Audiena and Siagian shows that there is a significant relationship between hygiene practices and the incidence of stunting in toddlers. Toddlers with poor hygiene practices have a 2.442 times risk of stunting compared to good hygiene practices (Audiena & Siagian, 2021). Reinforced by research conducted by Adha, et al explained that there is a significant relationship between hygiene practices and the incidence of stunting in toddlers. This is because the majority of mothers of toddlers do not make a habit of washing hands with soap before and after eating and after defecation (Adha et al., 2021).

The results of this study are not in line with research conducted by Silalahi, et al which shows that there is no relationship between hygiene parenting and the incidence of stunting in toddlers, this is because there is no difference in hygiene parenting between stunting toddlers and normal toddlers because most mothers of toddlers pay less attention to personal hygiene and the toddler environment (Silalahi et al., 2020). However, research conducted in Zambia by Mzumara, et al stated that one of the efforts to reduce the risk of stunting is to pay attention to sanitation (Mzumara et al., 2018).

According to the researcher's assumption, poor hygiene parenting can be one of the factors that affect the nutritional status of toddlers because if the mother does not maintain personal hygiene and the toddler's environment, bacteria will enter the toddler's body through food consumed and the surrounding environment that is not clean so that the toddlers are at risk of infectious diseases such as diarrhea which results in fluid loss and loss of important nutrients for the body, if this is allowed to continue to occur it will have an impact on the disruption of toddler growth which can cause stunting. Therefore, it is expected that mothers teach and familiarize toddlers to wash their hands with soap, cut toddlers' nails at least once a week or when the nails look dirty and familiarize toddlers to brush their teeth twice a day.

The Relationship between Health Parenting and the Incidence of Stunting

Based on the results of the research, it can be concluded that there is significant relationship between health parenting and the incidence of stunting in toddlers. If health parenting is poor, the health status of toddlers will be disturbed and the body's immunity will decrease, this can result in toddlers being susceptible to infectious diseases which, if it continues, will cause the growth process to be inhibited (Fadilah et al., 2020).

Good health parenting can be done by the mother by maintaining the health status of the child, keeping the child away from infectious diseases that can affect the child's health status, doing the first treatment if the child is sick and actively monitoring the growth and development of the child which aims to improve the continuity of the child's quality of life (Laili, 2018; Rambe, 2022).

In line with Rita's research, et al. explained that parenting utilization of health services is a dominant factor in the incidence of stunting, toddlers who have less utilization of health services are 22,750 times more likely to experience stunting (Rita et al., 2019). According to Femidio and Munaroh, health parenting is related to stunting because the provision of first aid when toddlers are sick is not appropriate, simple medicines are not available at home, mothers do not bring toddlers to Posyandu and incomplete immunization of toddlers (Femidio & Muniroh, 2020).

The results of the questionnaire found that most toddlers did not get complete basic immunization, mothers did not routinely bring their toddlers to the Posyandu because mothers thought that going to the Posyandu was only for immunization so that mothers tended to ignore weighing and measuring height to monitor the growth and development of toddlers, which led to the incidence of stunting in toddlers being detected slowly. In addition, the majority of mothers admitted that they never consulted health workers if their toddler's weight dropped from the previous month.

According to research by A.S. Ahmad, et all showed that toddler visits to posyandu had an effect of 43.0% on the incidence of stunting in toddlers. By bringing toddlers to the posyandu, mothers will get information about monitoring the nutritional status of toddlers and other health information that can be applied in everyday life. So that it can help reduce the incidence of stunting in toddlers (Ahmad et al., 2021). Reinforced by Theresia's research which states that toddlers who are routinely brought to the posyandu will have better nutritional status (Theresia, 2020).

According to the researcher's assumption, poor health parenting also affects the nutritional status of toddlers because if health parenting is not, it can increase the risk of

repeated infectious diseases, resulting in stunted growth and the risk of stunting and one of the indicators of toddler health parenting is bringing toddlers to posyandu, because in posyandu toddlers will get immunization, vitamin A, measurement of nutritional status. It is expected that by bringing toddlers regularly to the posyandu, the growth and development of toddlers can be monitored properly, because the age of toddlers is an age that is vulnerable to nutritional problems such as stunting.

The Relationship between Psychosocial Stimulation Parenting and the Incidence of Stunting

Based on the results of the study, it can be concluded that there is significant relationship between psychosocial stimulation parenting and the incidence of stunting in toddlers. Psychosocial stimulation parenting can also determine the nutritional status of toddlers. Toddlers who lack psychosocial stimulation parenting will be at risk of experiencing deviations in their growth and development process (Sukmawati & Rowa, 2020).

According to Zeitlin's theory, providing routine physical, verbal and auditive stimulation by parents to toddlers will result in stimulation of growth hormone and normal energy metabolism and a better immune response. Good psychosocial stimulation parenting will have a positive impact on the stimulation and emotional support needed by the toddler (Masrul, 2019; Nadiah et al., 2020).

The results of this study are supported by previous research which shows that there is a significant relationship between parenting patterns of psychosocial stimulation and the incidence of stunting in toddlers. Mothers who provide good parenting of psychosocial stimulation have a positive impact on the nutritional status of toddlers (Adha et al., 2021). In line with research conducted by Rita, et al, which states that toddlers with poor psychosocial stimulation parenting have a risk of 25,972 stunting compared to toddlers with good psychosocial stimulation parenting, because the results of good growth and development of toddlers are caused by good psychosocial stimulation parenting provided by mothers (Rita et al., 2019).

The results of this study are not in line with research conducted by Nadiah, et al. which states that there is no significant relationship between psychosocial stimulation and the incidence of stunting in toddlers aged 24-59 months because most of the stunted toddlers in Bondowoso Regency have received good psychosocial stimulation (Nadiah et al., 2020). Another study also showed that there was no significant relationship between psychosocial stimulation parenting and the incidence of stunting (Rambe, 2022).

The results of the interview found most toddler's mothers do not provide varied play tools that can support the growth and development of toddlers, do not familiarize storytelling to toddlers and do not provide separate books for toddlers, even the majority of mothers allow toddlers to use gadgets during the time the toddler wants on the grounds that the toddler is not fussy. This can be caused because mothers have a lower level of education so they do not know how to provide psychosocial stimulation for their children. In line with previous research which explains that the higher the level of education of a mother, the easier it will be to understand the health information obtained (Nurwiandani & Ekawati, 2022).

According to the researcher's assumption, psychosocial stimulation parenting patterns applied by mothers to toddlers are very important and affect the process of growth and development of toddlers. Stimulation provided by mothers can enrich the experience of toddlers and also affect the cognitive, visual, verbal and mental development of toddlers. The growth and development of toddlers will be faster if they get directed and regular stimulation from their mothers. Therefore, mothers are expected to provide toys that can stimulate the psychosocial development of toddlers and are expected to routinely monitor the psychosocial growth and development of toddlers regularly, such as bringing toddlers regularly to the posyandu.

CONCLUSIONS

There is a significant relationship between the diversity of food consumption, food parenting, hygiene parenting, health parenting and psychosocial stimulation parenting with the incidence of stunting and the most dominant factor causing stunting is the diversity of food consumption.

Health workers are expected to maintain and improve promotive and preventive efforts for stunting incidence by working with families of toddlers to improve food consumption and parenting patterns related to diet, hygiene, health and psychosocial stimulation.

Health center are expected to collaborate with related parties such as urban villages and sub-districts in providing clean water and latrines that are evenly distributed to overcome poor hygiene parenting, it is hoped that the provision of tools / toys that are able to stimulate the psychosocial development of toddlers in each posyandu and conduct regular psychosocial growth and development checks at posyandu and sweeping toddlers' homes.

Health workers together with cadres provide guidance to families who have stunted toddlers both related to food consumption and family parenting of toddlers. It is hoped that

there will be cooperation with the religious affairs office to provide education for prospective parents regarding the health knowledge of prospective mothers and good family parenting..

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