

## RESEARCH ARTICLE

## The relationship of mother's feeding practices and the frequency of diarrhoea in under-five children

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### Abstract

**Objective:** To determine the relationship between a mother's feeding practice and the incidence of diarrhoea in children aged <5.

**Method:** The quantitative, descriptive-analytical, cross-sectional study was conducted in June 2021, in Tropodo village, Waru district, Sidoarjo, Indonesia, and comprised mothers having children who were aged <5 years. Mother's feeding practice was the independent variable, while the dependent variable was the incidence of diarrhoea in children. Data was collected using the Comprehensive Feeding Practices Questionnaire and the relevant portions of the Demographic and Health Survey questionnaire. Data was analysed using Spearman Rho test.

**Results:** Of the 217 mothers, 110(50.7%) were aged 30-40 years, and of the 217 children, 96(44.2%) were aged 1 year. There were 124(57.1%) girls and 93(42.9%) boys among the children. There was a significant relationship between mother's feeding practice and the incidence of diarrhoea in children <5 ( $p=0.004$ ;  $r=0.194$ ).

**Conclusion:** Inappropriate maternal feeding practices were found to have the potential to cause diarrhoea in children aged <5.

**Keywords:** Feeding, Diarrhoea, Children. (JPMA 73: S-105 [Suppl. 2]; 2023)

**DOI:** <https://doi.org/10.47391/JPMA.Ind-S2-25>

### Introduction

Diarrhoea is still a problem that requires more attention, especially in cases involving children.<sup>1</sup> Diarrhoea in children aged <5 is one of the causes of increased mortality and morbidity rates in Indonesia.<sup>2</sup> According to the World Health Organisation (WHO), diarrhoeal diseases were the second most common cause of death in 2017 among children <5.<sup>3</sup>

According to the United Nations International Children's Emergency Fund (UNICEF), the number of infant deaths currently in Indonesia is 27 deaths per 1,000 live births, and every 30 seconds a child dies from diarrhoea.<sup>4</sup> Globally, nearly 1.7 billion cases of diarrhoea in children occur every year and kill around 525,000 children <5 each year.<sup>3</sup> Extraordinary events of diarrhoea of all ages in Indonesia in 2018 accounted for a case fatality rate (CFR) of 4.76%.<sup>2</sup>

Parents must be able to pay attention to the child's feeding by meeting the daily nutritional needs. Feeding practice is the behaviour of mothers in meeting the nutritional needs of children <5.<sup>5</sup> In Indonesia, the practice of feeding is generally influenced by a mother as the main caregiver for the child.<sup>6</sup> Feeding has a close relationship with the incidence of diarrhoea.<sup>1,7</sup> Research One of the causes of diarrhoea in children <5 is consuming formula milk, certain unhygienic foods or complementary foods at an early age.<sup>4</sup>

Some mothers usually give freedom to their children to choose the food they like without controlling the quality of the food, while quality nutrition is needed to support the immune system.<sup>6</sup>

A study in Indonesia stated that improper feeding was the cause of diarrhoea in infants.<sup>7</sup> Mothers have a role in children's food intake because the health of children <5 is influenced by maternal characteristics.<sup>6,8</sup>

The current study was planned to analyse the correlation between mothers' feeding practices and diarrhoea among children <5.

### Subjects and Methods

The quantitative, descriptive-analytical cross-sectional study was conducted in June 2021, in Tropodo village, Waru district, Sidoarjo, Indonesia. After approval from the ethics review committee of the Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia, the sample size was calculated using the Slovin's formula.<sup>9</sup> The sample was raised using purposive sampling technique. Those included were mothers having children <5 who stayed at home with the child every day. Mothers with children having any kind of allergy were excluded.

After taking informed consent from the subjects, data was collected at 6 Posyandu, a local Maternal and Child Health Centre (MCHC). Demographic characteristics were noted a predesigned proforma. Comprehensive Feeding Practices Questionnaire (CFPQ) was adapted from the Environmental

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influences on Child Health Outcomes (ECHO)<sup>10,11</sup> consisting of elements of monitoring, child control, emotion regulation, encourage balance, healthy environment, food as a reward, modelling, pressure to eat, restriction for health, restriction for weight control, teaching nutrition, and involvement. The types of questions were divided into favourable and unfavourable items. The questionnaire was scored on a 5-point Likert scale, ranging from never to always.

The incidence of diarrhoea in children <5 was measured using the Woman’s Questionnaire Topics questionnaire taken from the Demographic and Health Surveys (DHS).<sup>12</sup> The original questionnaire was in English, which was translated into Indonesian. After being translated into Indonesian, the questionnaire was tested for validity and reliability. The results of the validity and reliability tests of the two questionnaires were declared valid and reliable.<sup>13</sup>

The questionnaires were given to the respondents who had 5 minutes to fill them out.

Data was analysed using Spearman’s Rho to determine the correlations between mother’s feeding practices and diarrhoea in children <5.  $P < 0.05$  was taken as mark of statistical significance.

## Results

Of the 217 mothers, 110(50.7%) were aged 30-40 years, and of the 217 children, 96(44.2%) were aged 1 year. There were 124(57.1%) girls and 93(42.9%) boys among the children (Table 1).

**Table- 1:** Characteristics of the respondents (n=217)

Characteristics	Category	n (%)
<b>Mother’s age</b>	>40 years old	12 (5.5)
	20-30 years old	95 (43.8)
	30-40 years old	110 (50.7)
<b>Mother’s occupation</b>	Employee	72 (33)
	Housewife	127 (58.5)
	Entrepreneur	18 (8.29)
<b>Mother’s education</b>	Higher education	85 (39.2)
	Elementary school	6 (2.8)
	High school	103 (47.5)
	Middle school	23 (10.6)
<b>Child’s age</b>	1 year old	133 (32.5)
	2 years old	82 (27.4)
	3 years old	34 (15.7)
	4 years old	38 (17.5)
	5 years old	15 (6.9)
<b>Number of children in family</b>	1	96 (44.2)
	2	63 (29.0)
	3	46 (21.1)
	4	11 (5.1)
	5	1 (0.5)
<b>Gender of the child</b>	Male	93 (42.9)
	Female	124 (57.1)

Feeding practice was in the appropriate category was for 120(55.3%) mothers, while it was not appropriate in 97(44.7%) cases. The components of mothers’ feeding practice were noted in detail (Table 2).

**Table- 2:** Mother’s feeding practice components (n=217).

Feeding Practice Components	Category	n (%)
<b>Monitoring</b>	Appropriate	41 (18,9)
	Not Appropriate	176 (81,1)
<b>Child Control</b>	Appropriate	38 (17,5)
	Not Appropriate	179 (82,5)
<b>Emotional Regulation</b>	Appropriate	35 (16,1)
	Not Appropriate	182 (83,9)
<b>Encourage Balance</b>	Appropriate	195 (89,9)
	Not Appropriate	22 (10,1)
<b>Healthy Environment</b>	Appropriate	216 (99,5)
	Not Appropriate	1 (0,5)
<b>Food as Reward</b>	Appropriate	207 (95,4)
	Not Appropriate	10 (4,6)
<b>Modelling</b>	Appropriate	182 (83,9)
	Not Appropriate	35 (16,1)
<b>Pressure to Eat</b>	Appropriate	216 (99,5)
	Not Appropriate	1 (0,5)
<b>Restriction for Health</b>	Appropriate	112 (51,6)
	Not Appropriate	105 (48,4)
<b>Restriction for Weight</b>	Appropriate	72 (33,2)
	Not Appropriate	145 (66,8)
<b>Teaching Nutrition</b>	Appropriate	205 (94,5)
	Not Appropriate	145 (66,8)
<b>Involvement</b>	Appropriate	62 (28,6)
	Not Appropriate	155 (71,4)

There was a significant relationship between mother’s feeding practice and the incidence of diarrhoea in children <5 ( $p=0.004$ ;  $r=0.194$ ) (Table 3).

**Table-3:** Relationship between mother’s feeding practice and diarrhoea in children (n=217).

Variable	The incidence of diarrhoea			p-value	r-value
	Diarrhoea n (%)	No Diarrhoea n (%)	Total n (%)		
<b>Feeding Practice</b>					
<b>Appropriate</b>	41 (18.9)	79 (36.4)	120 (55.3)	0.004	0.194
<b>Not appropriate</b>	43 (19.8)	54 (24.9)	97 (44.7)		
<b>Total</b>	84 (38.7)	133 (61.3)	217 (100)		

## Discussion

The findings suggested that appropriate feeding practice has the potential to reduce the incidence of diarrhoea. This is in line with earlier research which stated that the choice of nutritious food for consumption contributes to the food intake obtained by children.<sup>14</sup> It can be interpreted that the practice of feeding is indirectly related to the health status of children.<sup>15</sup>

Food preparation, storage and feeding are common sources of bacterial contamination that cause diarrhoea. Food given to young children is a common route of transmission for some of the bacteria that cause diarrhoea.<sup>16</sup> A toddler's digestive system is still in the process of adaptation or transition, and is not strong enough to accept new food.<sup>17</sup>

Feeding practice consists of 12 components (Table 2).<sup>18</sup> Based on these components, the current study found that most parents did not provide proper food monitoring and control for toddler feeding. Forms of control include pressure on toddlers to eat (pressure) and restrictions to eat (restriction).<sup>18</sup> Pressure to eat implies forcing children to want to eat.<sup>18</sup> Children <5 are picky eaters<sup>19</sup> and lack of precise control and monitoring of food quality tends to potentially trigger health problems, including diarrhoea.

Mothers' inexperience in childcare result in higher rates of diarrhoeal infections.<sup>20,21</sup> The modelling component of feeding practice is a role model of mothers for giving a good example<sup>18</sup> so that it may affect eating habits in children <5.<sup>22</sup> Children need to be introduced to various types of healthy and nutritious food<sup>14</sup>. Eating habits in the family have a big influence on eating patterns. Healthy behaviour is defined as a person's response to a stimulus or object related to health, disease and factors that affect environmental health. Mother's healthy living behaviour will improve children's health.<sup>23</sup> Mother's demographic characteristics factors, such as age, occupation and education, are also enablers that influence the daily living habits related to the incidence of diarrhoea in children.<sup>1</sup>

The current study has its limitation as it focussed only on the mothers and left out other family members who may also have a role in the incidence of diarrhoea in children <5, especially in the case of working mothers.

## Conclusion

Mother's feeding practice was found to have a significant relationship with the incidence of diarrhoea in children <5. Proper feeding practice may reduce the incidence of diarrhoea in children <5.

**Acknowledgment:** We are grateful to the Faculty of Nursing, Universitas Airlangga, and to all the study participants.

**Disclaimer:** The text was presented as an Abstract at the 13th International Nursing Conference, held by the Faculty of Nursing, Universitas Airlangga, Indonesia.

**Conflict of Interest:** None.

**Source of Funding:** None.

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