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# Complementary Feeding Practices During COVID-19 Outbreak in Daerah Istimewa Yogyakarta, Indonesia, and Its Related Factor

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## 1 Introduction

Inappropriate complementary feeding (CF) is more challenging during the COVID-19 (coronavirus disease-2019) outbreak in Indonesia. It is explained through the policy for reducing virus transmission that brings an economic disruption and increases the number of labor reduction.<sup>1</sup> As a consequence, the loss of income at the household level will decrease their access to adequate nutritious food.<sup>2</sup> As a response to minimize the risk of COVID-19 in CF in this vulnerable population, we underlined the importance to examine the CF practices and its related determinants for providing information and further preparation for the possibility of another outbreak in the future.

## Materials and Methods

The research was a cross-sectional, observational study in DIY (Daerah Istimewa Yogyakarta) Province, Indonesia. We used an online survey for 4 weeks (April-May 2020). The sample is mothers of children aged 6 to 24 months and lived in DIY during the outbreaks. Data were analyzed using  $\chi^2$  test and Kolmogorov-Smirnov test for the bivariate analysis. A multivariate analysis with a logistic regression method was used for knowing the most affecting determinants of CF practices.

## Results and Discussion

### Characteristics of Study Participants

The participants are 192 mothers, aged 21 to 40 years old (97.7%), with housewives and civil servants/private employees being the majority occupation (45.3%; Table 1). A bachelor's degree was the education level achieved by the majority (75.4%). A total of 61.5% mothers think that the information about CF during the outbreak was available and have good CF knowledge (Table 2). Most of the participants (95%) continuing to breastfeed. Most of the children were

aged 9 to 24 months old (80%) and almost half of them are fed inappropriately (Table 2), 5.2% of them suffering under-nutrition (Table 1). The total household income was mostly in the range of 3 to 5 million/month (37%), while 35% of them were affected by income reduction. Also, half of the total households are a food-insecure household (Table 2).

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### Factors Related to CF Practices

Appropriate CF is characterized by fulfilment of its general principles, including starting the CF at 6 months with continuing breastfeeding; meet the minimum dietary frequency, amount, and variation; gradually increasing texture; practicing responsive feeding, good hygiene, and proper food handling.<sup>3</sup> Furthermore, based on this study result, we find that mother CF knowledge ( $P = .002$ ), child's age ( $P = .019$ ), and household food security ( $P = .006$ ) were the factors associated with appropriate CF practices in the context of COVID-19 outbreaks.

This research finds correspondence with the result of the previous systematic review, which stated that maternal knowledge on CF is a promoting factor of an appropriate CF practice in the household level.<sup>4</sup> Good knowledge of mothers helps understand the general rules of nutrition and further affects the selection and supply groceries, and so the family meal served.<sup>5</sup> This state explained how CF knowledge plays a role as the most affecting factor for CF practices.

Besides mothers' knowledge, a child's age is a determinant of CF practices. This result strengthens the result of another CF study indicating that the younger age of children had an optimal feeding frequency compared with the older

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**Table 1.** Sociodemographic Characteristics of Study Participants.

No.	Variables	Frequency (%)	Mother's knowledge		Sig.	Household food security		Sig.	Complementary feeding practice		Sig.
			Good	Lack		Secure	Insecure		Appropriate	Inappropriate	
1	Mother's age										
	20-40 years	188 (97.9%)	134	54	1.00	95	93	.6	104	84	.63
	>40 years	4 (2.1%)	3	1		1	3		3	1	
2	Residential area										
	Yogyakarta	43 (22.4%)	29	14	1.00	25	18		21	22	.99
	Sleman	74 (38.5%)	56	18		32	42		46	28	
	Bantul	64 (33.3%)	43	21		31	33	.96	32	32	
	Kulon Progo	9 (4.7%)	8	1		6	3		7	2	
Gunung Kidul	2 (1%)	1	1		2	0		1	1		
3	Household family members										
	2-3 persons	65 (33.9%)	50	15	.89	30	35	.96	38	27	1.00
	4 persons	60 (31.3%)	38	22		29	31		33	27	
≥5 persons	67 (34.9%)	49	18		37	30		36	31		
4	Father's occupation										
	No occupation	4 (2.1%)	3	1	.42	1	3	.14	2	2	.71
	Entrepreneur	59 (30.8%)	37	22		25	34		29	30	
	Farmer/fisher/craftsman	5 (2.6%)	3	2		0	5		2	3	
Civil servants/private employees	124 (64.6%)	94	30		70	54		74	50		
5	Child's nutritional status										
	Normal	182 (94.8%)	131	51	.48	94	88	1.00	103	79	.34
	Under nutrition	10 (5.2%)	5	4		2	8		4	6	

\*Significant  $P < .05$ .

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 group, while the older groups of age had better results in dietary diversity.<sup>6</sup>

The point of household food security as the determinants of IYCF (Infant and Young Child Feeding) Practice is strengthened by the result from a previous study in Kenya, which explained that infants who live in food-secure households were significantly more likely to achieve appropriate CF practices than those who are not.<sup>7</sup>

Interestingly, the socioeconomic factors did not have any direct association with CF practices, and significantly related only to household food security.<sup>8</sup> Furthermore, based on the multivariate analysis result, household food security has the lowest power among other significant determinants.

The availability of information and maternal education theoretically is a determinant of mother knowledge. Higher maternal education leads to a better appreciation for the information that will result in a better knowledge level.<sup>6</sup> Nevertheless, the study result showing no significant association between information availability and mothers' knowledge. This result is explained through the previous finding, which explained that education intervention for improving CF knowledge and practice needs a long period to bring significant results, while the information availability in this study is limited in the period of outbreaks.<sup>9</sup>

However, related to the limitation of this study, the research results may be different from the results of a face-to-face survey in rural areas that do not have any Internet or social media access.

## Conclusion

The mother's CF knowledge is the strongest determinant of an appropriate CF practice, even in the outbreak period. A sustainable intervention in CF knowledge is essential to build a mother's preparedness to maintain optimal CF practices in any condition. Furthermore, although the study results show that the COVID-19 socioeconomic impacts did not affect CF practice directly, household food security is still one of the significant CF determinants that is affected by socioeconomic variables. Governmental intervention is needed to ensure food security at the household level.

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**Table 2.** Analysis of Results of the Relationship Between All Independent Variables With Complementary Feeding Practices.

No.	Variables	Frequency (%)	Complementary food practice (CF)		Sig.
			Appropriate	Inappropriate	
1	Child's age				
	6-8 months	37 (19.3%)	27	10	.019*
	9-24 months	155 (80.7%)	80	75	
2	CF information availability				
	Available	118 (61.5%)	71	47	.12
	Lack	74 (38.5%)	36	38	
3	Mother's CF knowledge				
	Good	119 (62%)	86	33	.002*
	Lack	73 (38%)	21	52	
4	Household food security				
	Secure	96 (50%)	63	33	.006*
	Insecure	96 (50%)	44	52	
5	Mother's education				
	Junior high school	5 (2.6%)	1	4	.564
	High school	41 (21.4%)	12	29	
	Diploma	28 (14.6%)	10	18	
	Bachelor or up	141 (73.4%)	84	57	
6	Mother's occupation				
	Housewife	87 (45.3%)	52	35	.95
	Entrepreneur	18 (9.4%)	6	12	
	Civ servants/private employees	87 (45.3%)	49	38	
7	Total household income				
	<3 million	54 (28.1%)	25	29	.64
	3-5 million	71 (37%)	41	30	
	5-10 million	45 (23.4%)	30	15	
	>10 million	22 (11.5%)	11	11	
8	Change in income				
	Constant	125 (65%)	65	60	.155
	Decrease	67 (35%)	42	25	

\*Significant  $P < .05$ .


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