

ORIGINAL ARTICLE

DETERMINATION OF MATERNAL AND CHILD HEALTH STATUS IN RELATION TO NUTRITIONAL STATUS AND DEVELOPMENT OF CHILDREN DURING LACTATION: A CROSS-SECTIONAL STUDY BETWEEN MOTHERS WITH 0 - 6 MONTHS CHILDREN IN RURAL AGRICULTURAL AREAS OF INDONESIA

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ABSTRACT

Maternal and child health status (MCHS) plays an essential role in the exclusive breastfeeding practice (EBP), which in turn helps to determine the nutritional status and development of children (NSC & CD) aged 0-6 months. This study aimed to determine the prevalence and factors influencing EBP, NSC, and CD to MCHS in Jember, East Java, Indonesia. A family-based survey was conducted among 470 mothers with children aged 0-6 months, by using a stratified random sampling method. Furthermore, a self-administered questionnaire was used to measure the characteristics of children and mothers, MCHS, EBP, NSC (z score with weight per age= WAZ and height per age= HAZ), and CD (pre-screening developmental questionnaire=PSDQ). The prevalence of EBP was 74.7% (95% CI= 65.5 - 81.2%), with influential factors being education, family income, children's age, and distress to limitations. Also, the Z-score of WAZ and HAZ were 2.99 ± 0.22 and 3.01 ± 0.22 , respectively (3% of underweight and 1.7% of stunting). The factors influencing WAZ were children's age, birth weight, approach, and attentional shifting. However, the factors that only influenced the HAZ was the children's age. Also, among children three months old, the score of PSDQ was 8.30 ± 1.33 (0.8% of deviation and 56.5% of suspect development), and their influenced factors were mother's work, infant's age, and the weight of birth. Among those that were 6 months old, the PSDQ score was 8.83 ± 1.42 (7% of deviation and 24.3% of suspect development), and their influenced factors were mainly relationship. The analysis of the result further showed that the EBP, NSC, and CD, are related to MCHS, in rural agricultural areas. Therefore, the relationship of the parent-child should function appropriately, in order to support infant growth and development during lactation.

Keywords: Exclusive breastfeeding, Maternal and child health, Nutritional status, Child development.

INTRODUCTION

Children within the age of 0 - 6 months are in a critical period, as regards the stage of their development ¹, which is a necessary component of the sustainable development goals (SDGs) ². Nutrition and parenting ^{3,4}, play an important role in sustaining the early lives of children as a whole family system ⁵. The maternal and child health status (MCHS) ⁶, also plays a role in the feeding of infants, as regards exclusive breastfeeding practice (EBP), which ultimately determines the nutritional status and development of children (NSC & CD), that are aged 0 - 6 months.

In Indonesia, the coverage of children getting EBP up to 6 months old is 35.74%, while newborns getting initiation of early breastfeeding less than an hour post-birth is at

51.32% ⁷. This known fact indicates the low coverage of feeding for infants in Indonesia, where it is observed that delays in IMD have an impact on the nutritional status of children within the age of 0 - 6 months ⁸. Furthermore, regarding the Indonesian Health Profile in 2017, the prevalence of malnutrition and underweight among children within the age of 0-23 months was 3.5% and 11.3%, respectively. Moreover, the prevalence of very short and stunting children was 6.9% and 13.2%, respectively ⁷. Also, the description of the NCS has an impact on the CD, which helps the Indonesian government achieve the Healthy Indonesia program, with Family Approach (PIS-PK) ⁹.

The EBP, NSC, and CD have targeted the programs of the 5th Agenda of *Nawa Cita* of the Indonesian president, in a bid to help improve the health and nutritional status of

the society, through wellness and community empowerment efforts, which are supported by the financial protection and equal distribution of healthcare services¹⁰. This community and family empowerment services seem likely to be used to empower EBP, and support the health status, growth, and development of children. Also, the knowledges, attitudes, and activities of breastfeeding^{11,12}, are complementary nutritional practices for EBP^{13,14}, and family socio-economic conditions^{3,15}, which in turn affects the whole feeding process EBP (EBP). Furthermore, demographic, socio-economic, and biomedical variables were observed to have influenced EBP in Saudi Arabia¹⁶, while maternal age, afterbirth employment status, intended breastfeeding duration, place of delivery, and the timing of solid foods introduction, were associated with the period of any breastfeeding in China¹⁷.

However, based on MCHS, parents and family environment have an essential role in childcare practices, which in turn determines the success of children's growth and development^{18,19}. Regarding the systematic review, child health, growth and development, with maternal wellness, are being affected by EBP²⁰. Therefore, mother and infant physical contact²¹, child temperament²², psychological²³, and well-being of family²⁴, are being influenced on the basis of EBP interaction, feeding practices, with children growth and development. Also, the existence of MCHS as a unit of the family system requires structure and functionalization, in order to support the success of mothers' EBP, NSC, and CD, during the lactation period. Therefore, this study aims to determine the related factors of EBP, NSC, and CD, among mothers with 0-6 months old children.

METHODS

Design

A family-based survey with a cross-sectional study was conducted from May to July 2019, in 12 rural agricultural areas in Jember regency, East Java of Indonesia.

Setting and sample

This study was conducted in twelve areas of Integrated Health Centers (Posyandu). The sample size was estimated using a 95% confidence level and 10% precision, as the proportion of EBP and underweight in Indonesia was 35.74% and 14.8%, respectively⁷. The sampling size in this study was determined using the formula²⁵,

$$n = \frac{z_{1-\alpha/2}^2 \sum_{h=1}^L \frac{N_h^2 P_h (1-P_h)}{w_h}}{[N^2 d^2 + z_{1-\alpha/2}^2 \sum_{h=1}^L N_h P_h (1-P_h)]}$$

Therefore, the number of participants was 575, as described in Figure 1. Also, the inclusion criteria in this study were 0 - 6 months old children, that are being cared for by mothers in the family, during the lactation period. Children with defective heredities were also excluded, during data collection.

Further in this study, a stratified random sampling technique was used to recruit mothers and their children. Stratification of the samples regarding two of the stratum, (areas and Posyandu) was carried out. Divisions were made into seven and twelve, for both areas and Posyandu, respectively (Figure 1). Furthermore, the sample population was selected, based on a two-stage stratified random sampling design. In the first stage, random stratification of selected public health centres (PHCs) was carried out in the rural agricultural area of Jember, with the second stage being a selection of Posyandu. At each rural agricultural areas, proportional random sampling regarding the number of children registered in the Posyandu was conducted. Therefore, 470 mothers with their 0-6 months old children participated in this study, with an 85.92% response rate (Figure 1).

Instrument

A self-administered questionnaire was used for measuring the characteristics of children and mothers, MCHS, EBP, NCS, and also CD among mothers and their children aged 0-6 months. Variables in this study illustrated in the conceptual scheme in Figure 2.

Independent variables

In this research, various data were collected, with all the instruments used already tested validity and reliability in previous studies [26]. The characteristics being addressed to mothers, included age (years), education (not attending, elementary, junior high, senior high, diploma-3, and bachelor degree), employment status (yes or no), household income per months, maternal status (primipara or multipara), and type of family (nuclear or extended). Furthermore, the characteristic of children also included age (months), gender (boys or girls), the weight of birth (gram), length of birth (cm), allergic history (yes or no), hospitalization (yes or no), and history of family heredities (yes or no).

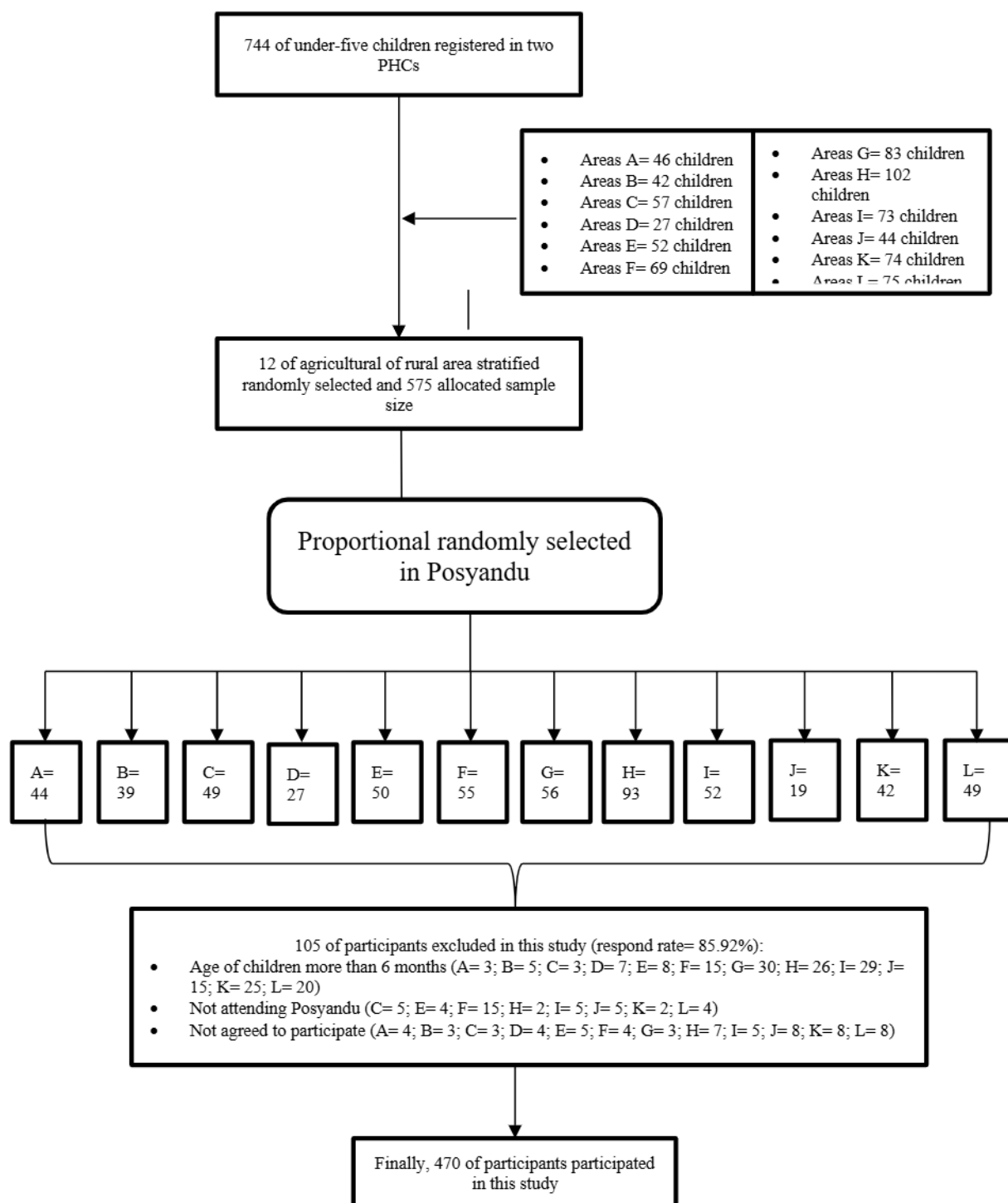


Figure 1. Sample framing

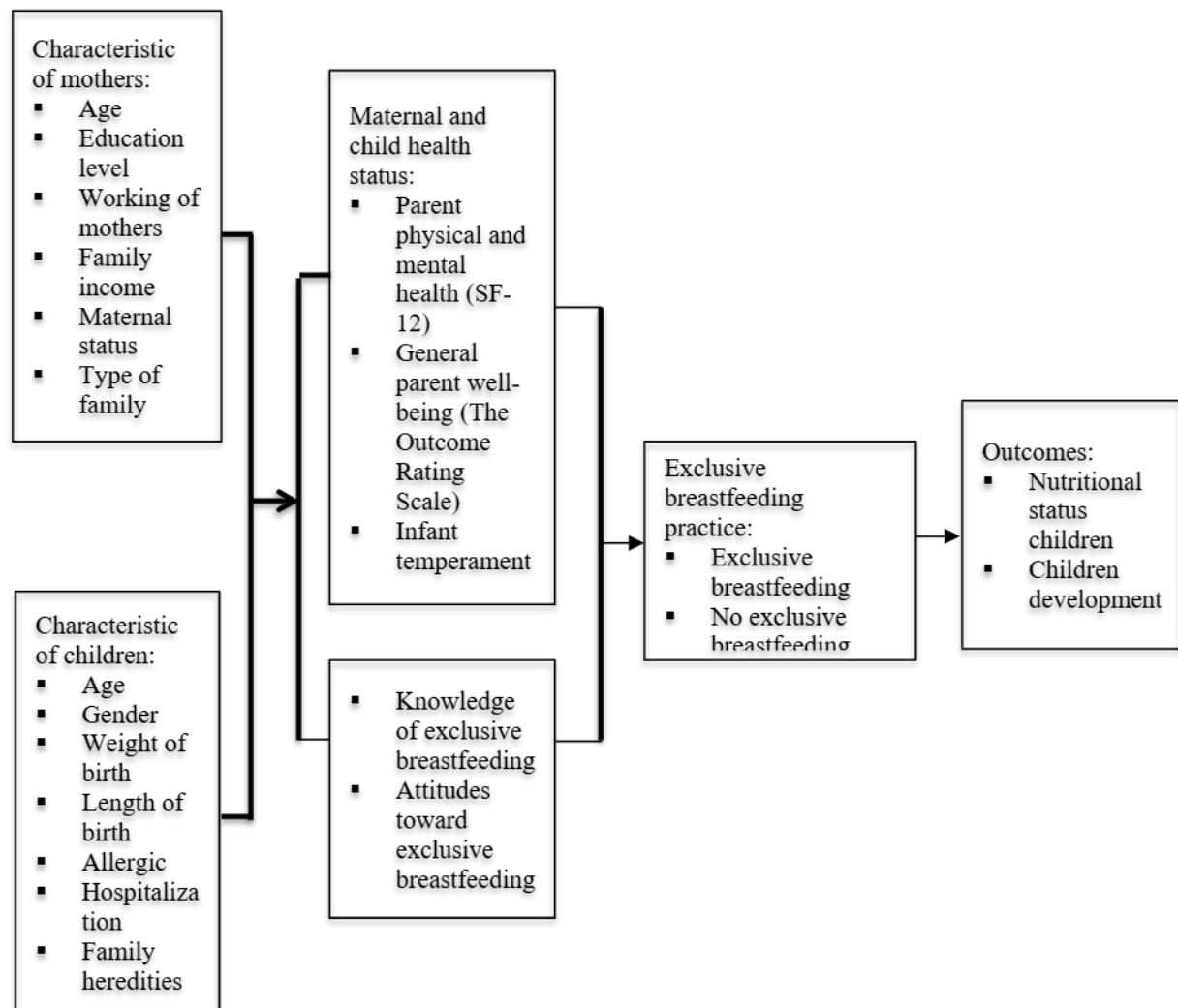


Figure 2. Conceptual scheme in this study

Also, parent physical and mental health (SF-12) were used to measure MCHS 27, outcome rating scale 28, and infant temperament 29. The SF-12 was assessed using 12 questions, consisting of a physical (PCS= 5 questions) and mental (MCS= 7 questions) summary. Due to being a 4-item self-report outcome, the general parent well-being (GPWB, The Outcome Rating Scale) was used to measure the mothers' problems, during lactation. The items of the GPWB included relationship, goals and topics, approach or method, with overall. Each of these items required the mothers to tick on a 10-cm line, where marks to the left and right indicated more difficulties and less problems in a particular domain, respectively. However, children temperament was measured using the Infant Behavior

Questionnaire (IBQ-R), which consisted sixteen scales (including approach, vocal reactivity, high intensity pleasure, smiling and laughter, activity level, perceptual sensitivity, sadness, distress to limitations, fear, falling reactions, low satisfaction, cuddliness/affiliation, duration of orienting, soot ability, social fright, and attention shifting). Also, the IBQ-R was used for parent report measurements, in order to assess the reactions of mothers with their children, during interactions. Moreover, the IBQ-R was constructed in a 7-point Likert format for each of the scales. Therefore, the access to healthcare was used to measure the quality of mothers' perception to use public medical centres, where higher scores to the 22-item questions indicated easy usage.

Furthermore, the EBP was measured using knowledge, attitude, and practices towards the activity³⁰. The knowledge of the EBP was measured using ten questions requiring a yes (1) or no (0) responses. The ten items were summed up to create a composite score of EBP knowledge, with higher scores indicating greater awareness of the breastfeeding activity (categorized poor ≤ 3 , medium 4 - 5, high > 7). Also the attitudes towards EBP was measured using 11 questions, consisting a 3-Likert scale (agree= 3, neutral= 2, disagree= 1). The 11 items were summed up to create a composite score of attitudes toward EBP, with higher scores indicating greater behaviours towards the breastfeeding activity (categorized poor ≤ 20 , medium 21 - 30, positive > 31). The EBP practice was also measured, by using seven questions to describe the characteristics of the breastfeeding process. Based on mothers experiencing the provision of complementary feeding during six months, EBP practice was categorized (EBP= just EBP; non EBP= added complementary feeding).

Outcome measure

In order to measure NSC, weight and height calculations were carried out, using digital scales and length boards scale as measurement techniques. The feeding parameter, through the use of growth standard (Z-score) for under-five children, from WHO (World's Health Organization), was used to classified their nutritional status. Also, WAZ was classified into three categories, including severely underweight (Z-score < -3.0), underweight (Z-score ≥ -3.0 to < -2.0), and normal (Z-score ≥ -2.0). Moreover, HAZ was also classified into three categories, namely severely stunting (Z-score < -3.0), stunting (Z-score ≥ -3.0 to < -2.0), and normal (Z-score ≤ -2.0).

Furthermore, the pre-screening developmental questionnaire (PDQ) developed and translated into Indonesian in 1996 (revised in 2005 as *Kuesioner Pra Skrining Perkembangan*, KPSP), was used to measure CD. Due to the developmental delay among children in PHCs, KPSP has been highly recommended for early detection³¹.

Data collection

Data were collected from eligible participants in the Posyandu, after obtaining consent forms. In each of the Posyandu, selections were conducted by using proportional random

sampling for 13 rural agricultural areas, as regards to Figure 1. Furthermore, the mothers were allowed to fill out the questionnaires in the waiting room of Posyandu. Additionally, nurses were responsible for guiding the mothers in filling out the questionnaire at the Posyandu, in order to control possible bias. After completion, the mothers all made their submissions to a research investigator, therefore getting their children's weight, height and development measured afterwards.

Ethical consideration

The study was approved by the Ethical Committee Review Boards of Indonesia (Number: 361/H25.8/KEPK/DL/2019).

Data analysis

All data were analysed using the IBM Statistical Package for Social Sciences software program, version 22.0. The statistical descriptive was used to determine the characteristics of participants, with mean and standard deviation (for numeric data), then percentage (for categorical data). To determine the factors related to EBP, logistic regression analysis was used, in order to examine the relationship between several factors of children and mothers, with the breastfeeding process. Furthermore, to determine the factors related to NSC and CD, a linear regression analysis was used, in order to examine the relationship between several factors of children and mothers, with the NSC and CD.

RESULTS

There were 470 participants that took part in this study, with the mean age of mothers (22.71 $\pm$ 6.22 years), children (3.91 $\pm$ 1.63 months), and employed moms at 18.7%. The majority maternal status and family type were multipara (63.8%), and extended (54.0%), respectively. Also, the mean age of children was 3.91(1.63 months, with 54.3% being boys (Table 1).

Furthermore, Table 2 showed the maternal and child health status, in this study. The mean physical and mental health score out of 12 was 41.52 $\pm$ 3.30, with the average GPWB score out of a total of 4 being 16.64 $\pm$ 2.95. Also, the mean infant temperament score out of 16 was 79.99 $\pm$ 15.27, with the average mothers' accessed healthcare services score out of a total of 22 being 79.99 $\pm$ 15.27.

Table 1: Characteristics of mothers and children (n= 470)

Characteristic of Mothers		Characteristic of Children	
Variable	n (%)	Variable	n (%)
Age (years)		Age (months)	
M±SD	22.71±6.22	M±SD	3.91±1.63
Education		Gender	
Not attending schools	13 (2.8)	Boys	255 (54.3)
Elementary schools	141 (30.0)	Girls	215 (45.7)
Junior high schools	118 (25.1)	Weight of birth (gram)	
Senior high schools	151 (32.1)	M±SD	3062.90±459.78
Diploma-3	7 (1.5)	Height of birth (cm)	
Bachelor	40 (8.5)	M±SD	49.04±2.71
Is the mother working?		History of hospitalization	
No	382 (81.3)	No	462 (98.3)
Yes	88 (18.7)	Yes	8 (1.7)
The family income per months (IDR)		Allergic history	
M±SD	1547978.72 ±1172358.97	No	418 (88.9)
Parity status		Yes	52 (11.1)
Primipara	170 (36.2)	Familial history diseases	
Multipara	300 (63.8)	No	390 (83.0)
Type of family		Yes	80 (17.0)
Nuclear family	216 (46.0)		
Extended family	254 (54.0)		

Note: M= Mean; SD= Standard deviation; IDR= Indonesian rupiah.

Table 3 also showed the EBP among mothers, as majority of them were observed to initiate breastfeeding within the first hour after delivery. Generally, the prevalence of EBP for 0-6 months old infants was 74.7%. Moreover, supplementary 1 showed knowledge and attitudes toward EBP. The mean knowledge and attitude scores out of 10 and 11 were 7.92 ± 1.19 and 25.43 ± 0.33 , respectively. Generally, the proportion of knowledge and attitudes towards EBP for mothers with 0-6 months old infants, were 89.1% of high awareness and 90% of moderate behaviours, respectively.

Also, Table 4 showed the measurement of NSC and CD for 0-6 months old infants, with the mean of WAZ and HAZ at 2.99 ± 0.22 and

3.01 ± 0.22 , respectively. Based on WAZ of thin, normal, and obese, the prevalence of NSC were 3%, 95.3%, and 1.7%, respectively. Also, the prevalence of NSC based on HAZ of short, normal, and tall were 1.7%, 95.1%, and 3.2%, respectively.

Therefore, the general PDQ scores among CD of 3 and 6 months old infants were 8.30 ± 1.33 and 8.83 ± 1.42 , respectively. The prevalence CD for 3 months old deviation, suspect, and normal infants were 0.8%, 56.5%, and 42.7%, respectively. Also, the prevalence CD for 6 months old deviation, suspect, and normal infants were 7%, 24.3%, and 68.7%, respectively.

Table 2: Maternal health status during the lactation period (n= 470)

Variable	M±SD
Parent physical and mental health	
Physical	17.78±1.55
Mental	23.74±2.41
Total score	41.52±3.30
General parent well-being	
Relationship	1.34±1.14
Goals and topics	5.69±0.93
Approach or method	3.87±2.22
Overall	5.75±0.95
Total score	16.64±2.95
Infant temperament	
Approach	5.70±1.96
Vocal Reactivity High	6.12±1.48
High-Intensity Pleasure	6.25±1.21
Smile and Laughter	6.30±1.22
Activity Level	6.33±1.23
Perceptual Sensitivity	3.63 2.37
Sadness	3.03±2.13
Distress to Limitations	3.45±2.24
Fear	4.89±2.06
Falling Reactivity/rate of recovery from distress	4.67 2.10
Low-Intensity Pleasure	5.32±1.88
Cuddliness	6.00±1.41
Duration of Orienting	4.76±2.06
Suitability	5.97±1.32
Social Fear	2.73±2.01
Attentional Shifting	4.83±1.96
Total score	79.99±15.27
Access to healthcare	
Total access to healthcare	94.61±6.93

Furthermore, logistic regression analysis (Table 5) showed that the factors influenced by EBP were the education level [elementary (OR= 3.16; 95% CI: 1.38-7.23), junior high (OR= 3.76; 95% CI: 1.62-8.70), and senior high (OR= 2.47; 95% CI: 1.15-5.32) schools], family income per month (OR= 1.00; 95% CI: 1.00-1.00), and age of children (OR= 0.83; 95% CI: 0.72-0.95).

Also, linear regression analysis (Table 6) showed that some factors influenced both NSC (WAZ and HAZ) and CD (PDQ for 3 and 6 months old). The factors that influenced WAZ were age of children (OR= 0.41; 95% CI: 0.36-0.45),

weight of birth (OR= 0.001; 95% CI: 0.001-0.001), infant temperament approach (OR= 0.07; 95% CI: 0.04-0.70) and attentional shifting (OR= -0.03; 95% CI: -0.06-0.94). Also, the only factor that influenced HAZ was age of children (OR= 0.50; 95% CI: 0.47-0.53). Furthermore, the factors influencing CD for 3 months old infants were mothers' work (OR= 0.42; 95% CI: 0.04-0.80), age of children (OR= 0.69; 95% CI: 0.53-0.86), and weight of birth (OR= 0.001; 95% CI: 0.001-0.001). Therefore, the factor that influenced CD for 6 months old infants was general parent well-being, including relationship (OR= -0.43; 95% CI: -0.64-(-)0.23).

Table 3: Early infants feeding practices (n= 470)

Indicators	n (%)
Breastfeeding initiation	316 (67.2)
Within 1 h	53 (11.3)
> 1 h to < 24 h	101 (21.5)
24 h and more	
Gave colostrum 1st 3 days	
Yes	403 (85.7)
No	67 (14.3)
Gave pre-lacteal feeds	
Yes	126 (26.8)
No	344 (73.2)
Pre-lacteal feeds given (n= 126)	
Plain boiled water	3 (2.4)
Glucose water	2 (1.6)
Formula milk	121 (96.0)
Reason for giving pre-lacteal feeds (n= 126)	
Delayed milk production	104 (82.4)
Baby unwell	1 (0.8)
Other reasons	21 (16.8)
Gave post lacteal feed	
Yes	346 (73.6)
No	124 (26.4)
Post lacteal feeds given (n= 124)	
Plain boiled water	3 (2.5)
Glucose water	2 (1.7)
Non-maternal milk	2 (1.7)
Formula	103 (82.5)
Tea/Juice	1 (0.9)
Mashed Vegetable	13 (10.7)
Reasons for giving post lacteal feeds (n= 124)	
Sooth stomach-ache	1 (0.9)
Baby goes hungry	14 (11.2)
Advised by relatives	5 (4.0)
Mother not producing enough milk	60 (48.4)
Advised by healthcare providers	4 (3.2)
Advised by TBA	1 (0.9)
Other reasons	39 (31.4)
Exclusive breastfeeding practices	
Exclusive	351 (74.7)
No exclusive	119 (25.3)

Note: TBA= Traditional birth attend

Table 4: Measurement of growth and development among children (n= 470)

Variable	M±SD
WAZ (n= 470)	2.99±0.22
Status of WAZ (n, %)	
Thin	14 (3.0)
Normal	448 (95.3)
Obese	8 (1.7)
HAZ (n= 470)	3.01±0.22
Status of HAZ (n, %)	
Short	8 (1.7)
Normal	447 (95.1)
Tall	15 (3.2)
Development children age 3 month (n= 256)	
Gross movement	2.38±1.26
Fine movement	1.98±0.18
Language ability	1.95±0.22
Socialization	1.99±0.09
Total score development	8.30±1.33
Category development age 3 month (n=256)	
Deviation (n, %)	2 (0.8)
Suspect (n, %)	144 (56.5)
Appropriate (n, %)	109 (42.7)
Development children age 6 months (n=115)	
Gross motor movement	3.09±1.08
Fine motor movement	3.83±0.48
Language ability	0.97±0.16
Socialization	0.95±0.22
Total score development	8.83±1.42
Category development age 6 month (n=115)	
Deviation (n, %)	8 (7.0)
Suspect (n, %)	28 (24.3)
Appropriate (n, %)	79 (68.7)

Note: M= Mean; SD= Standard deviation; WAZ= Weight per age; HAZ= Height per age

Table 5: Logistic regression factors influence breastfeeding practice (n= 470)

Variable	Breastfeeding practices			
	OR	p-value	95% CI	
			Lower	upper
Education		0.037		
Not attending schools	1.361	0.658	0.348	5.317
Elementary schools	3.160	0.006	1.381	7.233
Junior high schools	3.759	0.002	1.624	8.701
Senior high schools	2.471	0.021	1.147	5.320
Diploma-3	3.134	0.219	0.507	19.385
Bachelor	Ref			
Family income per months (IDR)	1.000	0.033	1.000	1.000
Age of children (months)	0.830	0.007	0.725	0.951
Infant temperament				
Distress to Limitations	0.866	0.004	0.784	0.956

-2LLx² = 493.363 (p < .001); Pearson goodness-of-fit = 4.672 (p = 0.792); Cox and Snell R² = 0.079; Nagelkerke R² = 0.116.

Table 6. Linear regression factors influence children development and nutritional status of children

Child development age 3 months					Nutritional status (WAZ)				
Variable	B	p	95% CI		Variable	B	p	95% CI	
			Lower	Upper				Lower	Upper
Working of mother	0.423	0.028	0.045	0.802	Age of children	0.408	0.000	0.365	0.451
Age of children	0.694	0.000	0.528	0.859	Weight of birth	0.000	0.000	0.000	0.000
Weight of birth	0.001	0.004	0.001	0.001	Approach	0.071	0.000	0.031	0.691
Perceptual sensitivity	0.053	0.099	-	0.115	Attentional shifting	-	0.025	-	0.937
Child development age 6 months					Nutritional status (HAZ)				
Relationship	0.433	0.000	-	0.227	Age of children	0.491	0.000	0.456	0.527
Able to cope illness	0.392	0.097	-	0.072	Smile and laughter	0.025	0.305	0.022	0.072

DISCUSSION

In this study, the prevalence of EBP for 6 months old infants was 74.7%, which was high, compared to those of National Indonesian Data and Saudi Arabia at 35.74%⁷ and 27.6%¹⁶, respectively. Regarding the measurement of NSC (WAZ and HAZ), the prevalence of underweight and stunting were 3% and 1.7%, respectively, which were lower than that of the National Health Data of Indonesia⁷. Also, based on the use of PSDQ, the CD among 3 months old children were identified to be 0.8% and 56.5% for deviation and suspect, respectively. The CD among 6 months old children was also measured to be 7% and 24.3% for deviation and suspect, respectively, which was observed to be lower than the previous study in Indonesia³². However, this study observed that rural agricultural areas had some special factors influencing EBP, NSC, and CD. The EBP were discovered to be influenced by the educational level of mothers, family income, age of children, and distress limitations of infant temperament. The NSC among 3 months old children were further associated with age of infants, weight of birth, approach, and attentional shifting. Also, the NSC among 6 months old children were related only the age of infants. Furthermore, the CD among 3 months old children were influenced by work ethics of mother, age of infants, and weight of birth. The CD among 6 months old

children were also associated with the relationship between infants and their parents.

This research identified that education level, family income, and children's age influenced EBP, which was also similar to previous studies^{3,15,16}. Also, distress limitations of infant's temperament was observed to influence EBP. This condition depends on the baby's condition, which is likely to cause stress to the mother during breastfeeding process. The stress caused is likely due to the condition of birth weight³³, and the cry of the child during the lactation period, which is likely to have an impact on the continuity of EBP. Also, the condition of the child's growth, development and relationship with parents^{24,34}, is likely to have an impact on family welfare during the lactation period. Therefore, monitoring the condition of infants and maternal characteristics of breastfeeding mothers is very necessary, in order to support the sustainability of EBP.

Also, observations showed that children's age and height influenced NCS (underweight and stunting), especially weight of birth, which were similar to previous studies^{14,32}. Also, infant temperament (including approach and attentional shifting) was observed to influence underweight among 6 months old children. This condition was probably due to the closeness and attention of babies with mothers during the growth period. With the family's

welfare through parent and child behaviour²⁹, children's nutrition should be facilitated well¹⁵. Therefore, the family as a social system should improve its function in providing love and care to children, in order to be facilitated in fulfilling NSC, to prevent underweight in 6 months old infants.

Furthermore, this study showed that mother's work, children's age, and weight of birth influenced CD 3 months old infants, which were similar to previous studies^{14,32}. Also, relationship factor was also observed to influence CD among 6 months old infants. This was because the level of parent well-being of a family in a kinship relationship, supports a child's development. The ability of parenting facilitates children's development, through beneficial relationships in achieving family goals^{23,35,36}. Moreover, parents should create parenting according to family needs, which is specially adapted to the characteristics of rural agricultural areas.

Strength and Limitations

The identification of the factors that influence the achievement of EBP, NSC, and CD through the existence of parenting and child health status, increases and strengthens family structure and functionalization. Furthermore, analysis of family and child health status facilitates the success of EBP, NCS, and CD. However, this research has several limitations, such as the study design's cross-sectional nature resulting in associations between the variables, rather than causal conclusions. Also, this limitation involves the measured prevalence of EBP, NSC, and CD in this study, which differs from those discovered in other studies, particularly measuring children's development using prospective research design regarding PHCs data, during under-five age³⁷.

CONCLUSION

Conclusively, MCHS are influenced by mother's and children's factors in rural agricultural areas. The development of children is correlated with working of mother, age of children, weight of birth, and general parent well-being of relationship. Meanwhile, the nutritional status of children is associated with age of children, weight of birth, infant temperament of approach and attentional shifting. Therefore, the connection of the parent-child should function, in order to support infant growth and development, during lactation. Furthermore, the prevalence of EBP, NSC, and CD should be used in mapping

vulnerable families, as regards family problems, during life cycle development. This is related to EBP from parents and children as a unit, therefore facilitating Healthy Indonesia program indicators with the Family approach.

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Supplementary 1. Maternal knowledge and attitudes towards breastfeeding (n= 470)

Aspect of knowledge on breastfeeding	M±SD	Aspect of attitudes towards breastfeeding	M±SD
Breast milk should be baby's first feed	0.99±0.09	Believe that EBP is beneficial to the child	2.97±0.22
Baby should be put to breast within 1 h of birth	0.88±0.33	The age of the mother influences her ability to EBP	2.05±0.89
Colostrum should be fed to the baby	0.96±0.19	A baby can survive without water	1.95±0.96
Breast milk alone can sustain baby for 6 month	0.92±0.27	Husbands should be involved in decision making on whether to EBP	2.40±0.90
Breast feeding protects baby from illness	0.98±0.14	Animal milk is suitable for a new born baby	2.00±0.93
Breast feeding protects mother from pregnancy	0.53±0.50	Breast milk is inadequate for babies 2 months or older	1.96±0.95
Expressed breast milk should be fed to the baby	0.99±0.10	Formula feeding is better choice for working mothers	2.09±0.91
Semi-solid food to be introduced at 6 months	0.91±0.28	Breastfed babies are healthier than fed babies	2.90±0.38
A pregnant woman can breastfeed her baby	0.20±0.40	Breast milk is more easily digested than formula	2.93±0.31
A baby should be breast fed on demand	0.55±0.50	Infant cannot survive without water besides breast milk	2.31±0.89
		Number of times a mother has given birth will influence her ability to EBP	1.87±0.84
Total score of knowledge	7.92±1.19	Total score of attitudes	25.43±0.33
Knowledge score (out of 10) (n, %)		Attitudes score (out of 40) (n, %)	
Poor	2 (0.4)	Negative	25 (5.3)
Medium	49 (10.4)	Moderate	423 (90.0)
High	419 (89.1)	Positive	22 (4.7)

Note: M= Mean; SD= Standard deviation; EBP= Exclusive breast feeding; Knowledge (Poor ≤3)