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The Prevalence of Underweight, Stunted, And Wasted, and the Risk Factors That Influence It in Infants Under Six Months

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ABSTRACT

The prevalence of malnutrition is still a significant worldwide problem. WHO states that 45% of child deaths worldwide are related to undernutrition. The study aims to know the prevalence of underweight, stunted, and wasted and the risk factors that influence it in infants under six months. The study method is a cross-sectional analysis of infant nutritional status parameters in healthy infants under six months. The study was established at 10 Community Health Centers in Banjarbaru, South Kalimantan, Indonesia, from June 2020 to June 2021. This study recruited 423 healthy infants, 223 (52.7%) boys and 200 (47.3%) girls aged 1-6 months. The prevalence of underweight, stunted, and wasted were 0.9%, 0.5%, and 13.5%, respectively. There is a significant relationship between maternal age and infant nutritional status based on BMI for age (p=0.025). There is a significant relationship between maternal education and infant nutritional status based on weight for length (p<0.05). There is a significant relationship between maternal occupation and infant nutritional status based on weight for length and body mass index (BMI) for age (p<0.05). There is a significant relationship between family income and infant nutritional status based on weight for age and weight for length (p<0.05). There is no association between infant nutritional status, maternal parity, and exclusive breastfeeding practices. Conclusions: There is a significant relationship between maternal education, maternal occupation, and family income with undernutrition in infants under six months.

1. Introduction

The first thousand days of life, from conception to 2 years, is a critical period in a child's development. This

phase's natural growth and development will influence and determine any subsequent effects [1], [2]. Brain development is a continuous process and runs in exponential harmony between the volume and pathways of neurons. This process is vital in developing intelligence, motor skills, speech, language, social, and independence [3], [4].

Many factors influence brain development. For example, Karavida and Valentine's research states that providing adequate nutrition can maximize the health and development of nerves in terms of fulfilling macronutrients (calories, protein, and fat) and micronutrients (iron, zinc, iodine, and others). Conversely, children with low nutritional status values will experience stunted brain growth and development and are not by their age stages [5- 8].

The prevalence of malnutrition is still a significant worldwide problem. WHO states that 45% of child deaths worldwide are related to undernutrition. In 2020 globally, 149.2 million children under the age of 5 were stunted, and 45.4 million children were wasted. More than half of all stunted and wasted children live in Asia. In Southeast Asia, the prevalence of stunting is 27.4%, and wasting is 8.2% [9]. In Indonesia, the Ministry of Health reports that the prevalence of stunted toddlers in Indonesia will be 24.4% in 2021 [10].

Parents play an essential role in the process of providing nutrition. Mothers are the first health providers and supervisors needed by children during early life. The type of care provided depends on the mother's knowledge and understanding of the fundamental aspects of nutrition [11]. Studies from several low- and middle-income countries show that most infants experience growth retardation during the first two years of life [12- 14].

Based on the description above, the authors want to know the nutritional status of infants under six months of age and look for factors that may play a role, such as maternal age, maternal education, maternal occupation, family income, parity, and exclusive breastfeeding.

2. Materials and Methods

2.1 Study Population

The study method is a cross-sectional analysis of infant nutritional status parameters in healthy infants under six months. The study was established at 10 Community Health Centers in Banjarbaru, South Kalimantan, Indonesia, from June 2020 to June 2021. Inclusion criteria are infants born at term (gestational age 37–42 weeks), not twins. The exclusion criteria were that the infant has congenital anomalies. The doctor in charge declared the infant healthy. At the time of recruitment, the infant's weight and length were measured by health personnel. Infant nutritional status is assessed based on body weight for age, body length for age, body weight for length, and body mass index (BMI) for age. Nutritional status based on body weight for age divided into normal weight and underweight. Underweight if the z-score is <-2 SD. Nutritional status based on body length for age is divided into normal and stunted if the z-score is <-2 SD. Nutritional status based on body weight for length is divided into good nutrition and undernutrition /wasted. Good nutrition if the z-score is −2 SD to +3 SD; undernutrition / wasted if the z-score is <-2 SD. Nutritional status based on BMI for age is divided into good nutrition and wasted. Good nutrition if the z-score is −2 SD to +3 SD. In contrast, undernutrition / wasted if the z-score is <-2 SD [15].

Maternal education is categorized as low if the mother's education is only junior high school and below the level. Maternal education is categorized as middle-high if the mother's education is senior high school and above. Family income is categorized as low income if the family income is below the poverty line. Family

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income is categorized as middle income if the family income is above the poverty line. When the research occurred, the poverty line was IDR 508,852/person/month [16]. The breastfed group is if the baby drinks breast milk only.

2.2 Statistical Analysis

All infant anthropometry measurements and factors that may play a role, such as maternal age, maternal education, maternal occupation, family income, parity, and exclusive breastfeeding, are analyzed by SPSS ver 2.5. All data are presented in the narrative and table. Data were analyzed using the Chi-Square test at a 95% confidence level (P<0.05). A significant relationship exists between infant nutritional status and maternal characteristics if the p-value <0.05.

3. FINDINGS AND DISCUSSION

Table 1 shows the infant's nutritional status based on weight for age, length for Age, weight for length, and BMI for Age. For example, Table 1 shows that the prevalence of infant nutritional status based on weight for length is 13.5% undernutrition / wasted. The Ministry of Health of the Republic of Indonesia in 2021 reported the nutritional status of babies based on weight for height for children under two years of age, namely malnutrition of 1.0% and undernutrition of 3.9%.17 Infant nutritional status based on weight for age for children under two years of age is very underweight by 1.2% and underweight by 5.2%.17 Infant nutritional status based on height for age for children under two years old is very short (severely stunted) at 2.7% and short (stunted) at 6.5% [17].

Table 1 Infant nutritional status based on Weight for Age, Length for Age, Weight for Length, and BMI for Age

Infant Nutritional Status Parameter	TOTAL n=423	%
Weight For Age		
Normal Weight	419	99.1
Underweight	4	0.9
Length For Age		
Normal	421	99.5
Stunted	2	0.5
Weight For Length		
Good Nutrition	366	86.5
Undernutrition/wasted	57	13.5
BMI For Age		
Normal	385	91
Wasted	38	9

Table 2 shows the most characteristics of mothers aged 22-35 years, amounting to 324 people (76.6%). Mother's education level is mainly in the middle-high of 281 people (66.4%). Maternal education is the most unemployed of 356 people (84.2%). The highest family income level is the middle group, with 263 people (62.2%). Most maternal parity is multipara, namely 255 people (60.3%). Exclusive breastfeeding was found in 286 mothers (67.6%).

Table 2 Maternal Characteristics

Maternal Characteristics	TOTAL n = 423	%

Maternal age (years)		
≤ 21	42	9.9
22-35	324	76.6
>35	57	13.5
Maternal education		
Low	142	33.6
Middle-High	281	66.4
Maternal employment		
Unemployed	356	84.2
Employed	67	15.8
Family Income		
Low income	160	37.8
Middle income	263	62.2
Maternal parity		
Primipara	168	39.7
Multipara	255	60.3
Maternal breastfeeding		
Breastfed	286	67.6
Breastfed and others	137	32.4

Table 3 shows the association between infant nutritional status with maternal age, maternal education, maternal occupation, family income, maternal parity, and exclusive breastfeeding.

Table 3 Chi-square test results for the association between infant nutritional status parameters and maternal characteristics (p<0.05 is significant)

Maternal Characteristics N = 423	WEIGHT for Age		P	HEIGHT for Age		P	WEIGHT for HEIGHT		P	IMT for Age		P
	GOOD NUTRITION	UNDER WEIGHT		NORMAL	STUNTED		GOOD NUTRITION	UNDER NUTRITION/WASTED		NORMAL	WASTED	
Maternal Age												
<21	42	0	0,572	42	0	0,586	34	8	0,444	35	7	0,025
22-35	321	3		322	2		284	40		295	29	
>35	56	1		57	0		48	9		55	2	
Maternal education												
Low	142	0	0,306	142	0	0,553	113	29	0,004	125	17	0,150
Middle-High	277	4		279	2		253	28		260	21	
Maternal occupation												
Employed	352	4	1,0	354	2	1,0	302	54	0,018	320	36	0,040
Unemployed	67	0		67	0		64	3		65	2	
Family Income												
Low Income	156	4	0,02	159	1	1,0	130	30	0,018	138	22	0,013
Middle Income	263	0		262	1		236	27		247	16	
Maternal parity												
Primipara	167	1	1,0	167	1	1,0	145	23	1,0	151	17	0,603
Multipara	252	3		254	1		221	34		234	21	
Maternal breastfeeding												
Breastfed	282	4	0,309	285	1	0,543	249	37	0,650	261	25	0,856
Breastfed and others	137	0		136	1		117	20		124	13	

3.1 Relationship between maternal age and infant nutritional status under six months

This study shows a significant relationship between maternal age and infant nutritional status based on BMI for age (p=0.025) (See Table 3). [18] show that babies born to teenage mothers (compared to babies born to adult mothers) are 7.6 times more likely to be stunted, 2.9 times more likely to be wasted, and 12.8 times more likely to be underweight.

A mother's age also influences parenting patterns regarding exclusive breastfeeding from 0-6 months. A study by [19] find that young teenage mothers who breastfeed their children in the range of 1 to 6 months report that during pregnancy, 81% -84% of these mothers want to breastfeed their children, but only 39% - 69% of mothers start breastfeeding after giving birth. More than half stopped breastfeeding within the first

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month, and only 18.7%-22.6% continued breastfeeding for up to 6 months. Adequate breastfeeding provides adequate nutrition for babies to grow and develop and prevents malnutrition. Contrary to the research above, a study shows that the mother's age is not directly proportional to the baby's nutritional status [20].

3.2 Relationship between maternal education and infant nutritional status under six months

This study shows that there is a significant relationship between maternal education and infant nutritional status based on weight for length ($p<0.05$) (See Table 3). Education and easy access to information are vital in improving children's health. A study states that the risk of wasting is 3.33 times greater in children of mothers without formal education in Pakistan [21]. Mothers' formal education and easy access to information are crucial in the health status of children so that they can reduce the risk of wasting, stunting, and underweight events compared to mothers without formal education and demanding access to information. Conversely, a lack of knowledge about maternal and child health can result in neglect of the baby's health conditions and delays in treatment [6]. [23] state that mothers with higher educational backgrounds have a better understanding of health and implementation of child feeding than mothers with low educational backgrounds. Mothers with a higher educational background tend to understand more about the importance of infant nutrition and breastfeeding practices [22]. [24] state that the knowledge of mothers with higher education is not better than mothers with low education concerning the nutritional status of infants; this is because the mother's nutritional knowledge is only sometimes aligned with appropriate breastfeeding/infant feeding practices.

Research by [25] among medical students regarding knowledge, attitudes, and behavior regarding breastfeeding infants to grow and develop babies showed that there was a significant relationship ($p<0.001$) between knowledge and attitudes, between knowledge and behavior, between attitudes and behavior, in breastfeeding to the baby. This study shows that comprehensive nutritional knowledge for infants 0-6 months is an essential factor in improving the nutritional status of infants.

3.3 Relationship between maternal occupation and infant nutritional status under six months

Working mothers will add to the family income so that the mother's nutrition during pregnancy and breastfeeding is more secure, providing more nutrition for the baby during the 0-6 month period. This study shows that there is a significant relationship between maternal occupation and infant nutritional status based on Weight for Length and BMI for Age ($p<0.05$) (See Table 3). [26] showed a significant relationship between family income and malnutrition in infants aged 0-6 months. [27] also show that a good family income will affect the excellent composition of breast milk. On the other hand, [28] study shows that maternal daily work hours could be an important determinant of child stunting in the northern region of Ghana.

Long working hours with minimal pay harm children's nutritional status [27]. Research by [23] in Ethiopia shows no relationship between stunting and a mother's employment because mothers who do not work have more time to care for and breastfeed their babies.

3.4 Relationship between family income and infant nutritional status under six months

This study shows that there is a significant relationship between family income and infant nutritional status based on weight for age and weight for length ($p<0.05$) (See Table 3). This study's results align with the research of [29], which shows a significant relationship between family income and nutritional status and the development of children under five [29].

[30] show that the risk of stunting increases along with the decline in the Household Wealth Index (HWI). A high HWI reflects an increase in household ability to purchase and access good quality food, more accessible access to health services, and improved status of sanitation and clean water facilities. Good hygiene practices play a role in improving the health of infants related to the prevention of various infectious diseases, which will ultimately affect the nutritional status of infants [31- 33]. Families with high HWI can fulfill minimal food diversity for children. Dietary diversity in children plays a vital role in fulfilling macronutrients and micronutrients for their growth and development [34], [35].

3.5 Relationship between maternal parity and infant nutritional status under six months

This study's results indicate no significant relationship between the number of parity mothers and the nutritional status of infants (See Table 3). However, a study by [36] found that the lipid content in breast milk increased with parity. [37] showed that compared to the single parity group, the lipid concentrations of the two parities showed an increase of 36% ($p = 0.016$), three parities showed an increase of 103% ($p=0.001$) and in the four parity group an increase of 72% ($p=0.03$). This increase in lipid levels may be due to structural or functional changes in the mammary glands associated with aging and successive pregnancies, which may cause changes in the macronutrient content of breast milk. In contrast, another study showed that colostrum and mature milk from primiparous mothers contained higher protein and lower carbohydrate concentrations than multiparous mothers [38].

Contrary to our study's results, [22] research state that parity is a determinant of the incidence of stunting in toddlers aged 12-59 months. Toddlers who have mothers with multiple parities have a 3.25 times greater risk of stunting than mothers with little parity. Other studies have shown that children born at more parity can experience growth and development disorders because the burden on parents will be more significant with increasing children [39].

3.6 Relationship between exclusive breastfed and infant nutritional status under six months

This study showed no significant relationship between breastfed and infant nutritional status ($p<0.05$) (See Table 3). [26] showed a significant relationship between the mother's attitude and the baby's nutritional status in infants 0-6 months. Undernutrition babies are caused by mothers' lack of knowledge about giving breast milk to their babies. Mothers consider babies who are fussy and do not sleep well as not full, so mothers give other food besides breast milk. [40] study, which included 917 pairs of mothers and babies under six months in Bangladesh, stated that there was no significant relationship between exclusive breastfeeding and the incidence of stunting. However, exclusive breastfeeding is significantly associated with the incidence of being underweight (p-value = 0.018). Mothers who give exclusive breastfeeding are 36% less likely for their babies to experience underweight than mothers who do not give exclusive breastfeeding.

On the other hand, [41] study showed a significant relationship between mothers who were non-exclusively breastfed and introduced complementary foods earlier under five months with increased body weight (zBMI-change values) in the 4-5 month age group. Early introduction of complementary foods to breast milk is associated with too rapid or excessive weight gain, which will be a risk factor for the incidence of being overweight later in life. A study in Australia with a sample of 3153 infants showed that introducing solid foods earlier (before four months) was associated with an increase in BMI above average at the age of 1 year [42]. However, other studies have stated that there is no consistent evidence between the introduction of complementary foods earlier and the future risk of being overweight [43].

4. Study limitation

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The limitation of this study is that the research is cross-sectional. If every baby were followed in a cohort from birth to 6 months, the underweight, stunted, and wasted prevalence would undoubtedly be more accurate. Therefore, an assessment of whether there is a significant relationship between infant nutritional status and maternal characteristics will be closer to reality. In addition, in this study, there was no mention of the mother's status of the baby. Of course, the mother's nutritional status also determines the infant's nutritional status, especially breastfed babies.

5. Conclusion

The prevalence of underweight, stunted, and wasted were 0.9%, 0.5%, and 13.5%, respectively. There is a significant relationship between maternal education, maternal occupation, and family income with waste in infants under six months.

6. References

[1] Schwarzenberg SJ, Georgieff MK, Daniels S, Corkins M, Golden NH, Kim JH, et al. Advocacy for Improving Nutrition in the First 1000 Days to Support Childhood Development and Adult Health. Pediatrics. 2018 Feb 1;141(2).

[2] Rosales FJ, Reznick JS, Zeisel SH. Understanding the role of nutrition in the brain and behavioral development of toddlers and preschool children: identifying and addressing methodological barriers. Nutr Neurosci. 2009 Oct 19;12(5):190–202.

[3] Bluml S, Wisnowski JL, Nelson MD, Paquette L, Gilles FH, Kinney HC, et al. Metabolic Maturation of the Human Brain From Birth Through Adolescence: Insights From In Vivo Magnetic Resonance Spectroscopy. Cerebral Cortex. 2013 Dec 1;23(12):2944–55.

[4] Georgieff MK, Ramel SE, Cusick SE. Nutritional influences on brain development. Acta Paediatr. 2018 Aug;107(8):1310–21.

[5] Karavida V, Tympa E CA. The Role of Nutrients in Child's Brain Development. JOURNAL OF EDUCATION AND HUMAN DEVELOPMENT [Internet]. 2019;8(2). Available from: http://jehdnet.com/vol-8-no-2-june-2019-abstract-18-jehd

[6] Ehrenkranz RA. Nutrition, Growth and Clinical Outcomes. In 2014. p. 11–26.

[7] Cusick SE, Georgieff MK. The Role of Nutrition in Brain Development: The Golden Opportunity of the "First 1000 Days." J Pediatr. 2016 Aug;175:16–21.

[8] Valentine CJ. Nutrition and the developing brain. Pediatr Res [Internet]. 2020 Jan 31;87(2):190–1. Available from: http://www.nature.com/articles/s41390-019-0650-y

[9] United Nations Children's Fund, World Health Organization WBG. Levels and trends in child malnutrition: UNICEF/WHO/The World Bank Group joint child malnutrition estimates: key findings of the 2021 edition.

[10] Bayu D. . "Prevalensi Stunting di Indonesia Capai 24,4% pada 2021" [Internet]. [cited 2023 Jan 23]. Available from: https://dataindonesia.id/ragam/detail/prevalensi-stunting-di-indonesia-capai-244-pada-2021.

[11] Scaglioni S, De Cosmi V, Ciappolino V, Parazzini F, Brambilla P, Agostoni C. Factors Influencing Children's Eating Behaviours. Nutrients. 2018 May 31;10(6):706.

[12] Utami N, Rachmalina R, Irawati A, Sari K, Rosha BC, Amaliah N et al. Short birth length, low birth weight and maternal short stature are dominant risks of stunting among children aged 0-23 months: evidence from Bogor longitudinal study on child growth and development, Indonesia. Mal J Nutr.2018;24:11–23.

[13] Lundeen EA, Stein AD, Adair LS, Behrman JR, Bhargava SK, Dearden KA, et al. Height-for-age z scores increase despite increasing height deficits among children in 5 developing countries. Am J Clin Nutr. 2014 Sep 1;100(3):821–5.

[14] Leroy JL, Ruel M, Habicht JP, Frongillo EA. Linear Growth Deficit Continues to Accumulate beyond the First 1000 Days in Low- and Middle-Income Countries: Global Evidence from 51 National Surveys. J Nutr. 2014 Sep 1;144(9):1460–6.

[15] Menteri Kesehatan RI. PERMENKES RI nomor 2 Tahun 2020 tentang standar antropometri anak. NOMOR 2 TAHUN 2020 INDONESIA; 2020.

[16] Badan Pusat Statistik (BPS). Garis Kemiskinan (Rupiah/Kapita/Bulan) Menurut Provinsi dan Daerah 2019-2020. JAKARTA; 2023.

[17] Kementerian Kesehatan RI 2021. Profil kesehatan RI 2021. 2021.

[18] Wemakor A, Garti H, Azongo T, Garti H, Atosona A. Young maternal age is a risk factor for child undernutrition in Tamale Metropolis, Ghana. BMC Res Notes. 2018 Dec 10;11(1):877.

[19] Kanhadilok S, McGrath JM. An Integrative Review of Factors Influencing Breastfeeding in Adolescent Mothers. J Perinat Educ. 2015;24(2):119–27.

[20] Zhu D, Chen W, Pan Y, Li T, Cui M, Chen B. The correlation between maternal age, parity, cardiac diastolic function and occurrence rate of pre-eclampsia. Sci Rep. 2021 Apr 23;11(1):8842.

[21] Tariq J, Sajjad A, Zakar R, Zakar M, Fischer F. Factors Associated with Undernutrition in Children under the Age of Two Years: Secondary Data Analysis Based on the Pakistan Demographic and Health Survey 2012–2013. Nutrients. 2018 May 26;10(6):676.

[22] Palino IL, Majid R A. Determinan kejadian stunting pada balita usia 12-59 bulan di wilayah kerja puskesmas puuwatu kota kendari tahun 2016. JURNAL ILMIAH MAHASISWA KESEHATAN MASYARAKAT. 2017;2(6):1–12.

[23] Amaha ND, Woldeamanuel BT. Maternal factors associated with moderate and severe stunting in Ethiopian children: analysis of some environmental factors based on 2016 demographic health survey. Nutr J [Internet]. 2021 Dec 27;20(1):18. Available from: https://nutritionj.biomedcentral.com/articles/10.1186/s12937-021-00677-6

[24] Savitha SV, Thimmajja, Sunanda GG N. The correlation between level of knowledge and

ISSN: 0005-2523
Volume 63, Issue 02, February, 2023

knowledge on practices regarding infant feeding among mothers of rural community: a correlation study. Int J Community Med Public Health [Internet]. 2022 Aug 26;9(9):3476. Available from: https://www.ijcmph.com/index.php/ijcmph/article/view/10022

[25] Sudarsanan H, Arumugam S, VipanchiKamepalli S KJ. Knowledge, Attitude And Practice Of Infant Feeding Practices Among Medical Students. European Journal of Molecular & Clinical Medicine. 2020;7(8):3644–54.

[26] Harahap MLS, Rangkuti E, Batubara NA, Siregar NS, Siregar RA DR. Analysis of Factors Affecting Poor Nutrition in Infants Aged 0-6 Months. International Journal of Public Health Excellence (IJPHE) [Internet]. 2022 Jan 16;1(1):46–51. Available from: https://ejournal.ipinternasional.com/index.php/ijphe/article/view/11

[27] Bravi F, Wiens F, Decarli A, Dal Pont A, Agostoni C FM. Impact of maternal nutrition on breast-milk composition: a systematic review. Am J Clin Nutr [Internet]. 2016 Sep 1;104(3):646–62. Available from: https://academic.oup.com/ajcn/article/104/3/646/4668536

[28] Garti H, Ali Z GH. Maternal daily work hours affect nutritional status of children in Northern Ghana. Nutrire [Internet]. 2018 Dec 15;43(1):16. Available from: https://link.springer.com/10.1186/s41110-018-0075-0

[29] Putri AC, Irwanto AA. The influence of family income and number of children with nutritional and development status of children under five years old on early marriage mother. International Journal of Modern Trends in Engineering & Research [Internet]. 2018 Jul 23;5(7):72–8. Available from: https://www.ijmter.com/papers/volume-5/issue-7/the-influence-of-family-income-and-number-of-children-with-nutritional-and-development-status-of-children-under-five-years-old-on-early-marriage-mother.pdf

[30] Titaley CR, Ariawan I, Hapsari D, Muasyaroh A, Dibley MJ. Determinants of the Stunting of Children Under Two Years Old in Indonesia: A Multilevel Analysis of the 2013 Indonesia Basic Health Survey. Nutrients [Internet]. 2019 May 18;11(5):1106. Available from: https://www.mdpi.com/2072-6643/11/5/1106

[31] Fink G, Günther I, Hill K. The effect of water and sanitation on child health: evidence from the demographic and health surveys 1986–2007. Int J Epidemiol. 2011 Oct;40(5):1196–204.

[32] Owino V, Ahmed T, Freemark M, Kelly P, Loy A, Manary M, et al. Environmental Enteric Dysfunction and Growth Failure/Stunting in Global Child Health. Pediatrics. 2016 Dec 1;138(6).

[33] Mahmudiono T, Nindya T, Andrias D, Megatsari H, Rosenkranz R. Household Food Insecurity as a Predictor of Stunted Children and Overweight/Obese Mothers (SCOWT) in Urban Indonesia. Nutrients. 2018 Apr 26;10(5):535.

[34] Ahmad I, Khalique N, Khalil S, Urfi, Maroof M. Dietary diversity and stunting among infants and young children: A cross-sectional study in Aligarh. Indian Journal of Community Medicine. 2018;43(1):34.

[35] Nankinga O, Kwagala B, Walakira EJ. Maternal employment and child nutritional status in Uganda. Navaneetham K, editor. PLoS One. 2019 Dec 19;14(12):e0226720.

[36] Bachour P, Yafawi R, Jaber F, Choueiri E, Abdel-Razzak Z. Effects of Smoking, Mother's Age, Body Mass Index, and Parity Number on Lipid, Protein, and Secretory Immunoglobulin A Concentrations of Human Milk. Breastfeeding Medicine. 2012 Jun;7(3):179–88.

[37] Burianova I, Bronsky J, Pavlikova M, Janota J, Maly J. Maternal body mass index, parity and smoking are associated with human milk macronutrient content after preterm delivery. Early Hum Dev. 2019 Oct;137:104832.

[38] Mangel L, Mimouni FB, Feinstein-Goren N, Lubetzky R, Mandel D, Marom R. The effect of maternal habitus on macronutrient content of human milk colostrum. Journal of Perinatology. 2017 Jul 13;37(7):818–21.

[39] Podungge Y, Yulianingsih E, Porouw HS, Saraswati E, Tompunuh MM, Claudia JG, et al. Determinant Factors of Stunting in Under-Five Children. Open Access Maced J Med Sci. 2021 Dec 17;9(B):1717–26.

[40] Aktar K. The association between exclusive breastfeeding and nutritional status among infants under six months of age in Bangladesh: A secondary analysis of Bangladesh Demographic and Health Survey, 2017-18 [Internet]. Vol. Independen. [Department of Women's and Children's Health, Faculty of Medicine, Disciplinary Domain of Medicine and Pharmacy, Uppsala University]; 2021. Available from: http://uu.diva-portal.org/smash/get/diva2:1569670/FULLTEXT01.pdf

[41] Helle C, Hillesund ER, Øverby NC. Timing of complementary feeding and associations with maternal and infant characteristics: A Norwegian cross-sectional study. Wiley AS, editor. PLoS One. 2018 Jun 27;13(6):e0199455.

[42] Sun C, Foskey RJ, Allen KJ, Dharmage SC, Koplin JJ, Ponsonby AL, et al. The Impact of Timing of Introduction of Solids on Infant Body Mass Index. J Pediatr. 2016 Dec;179:104-110.e1.

[43] Patro-Gołąb B, Zalewski BM, Kołodziej M, Kouwenhoven S, Poston L, Godfrey KM, et al. Nutritional interventions or exposures in infants and children aged up to 3 years and their effects on subsequent risk of overweight, obesity and body fat: a systematic review of systematic reviews. Obes Rev. 2016 Dec;17(12):1245–57.

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