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Duration of Breastfeeding as Predictor of Anthropometric Indices of Weight and Height of 0–24 Months Children in Delta State

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Abstract

Breastfeeding as a natural process of life, continues to generate debate on the benefit of body mass index (BMI), as duration of breastfeeding always attract issues in breast feeding campaigns. Hence there is the need to assess the duration of breast feeding in relation to BMI. The study was cross-sectional using registered health care centres. The recall method was used to determined mother's duration of breast feeding. Children were weighed using children weighing scale (Docbel Industries, India). It was graduated in metric measurement, while the heights were obtained using a self-made stadiometer to the nearest 0.1cm. BMI was calculated using the formula BMI = wt/ht (m)1 16 ± 3.45. While fed for 0-6 months children as 15 ± 4.10, children fed for 0-18 months was -837 ± 3.31. It was recommended that duration of breastfeeding is not a significant variable in BMI in children but efforts could be directed at exclusive breastfeeding and weaning method.

Keywords: Children; Breastfeeding Duration; Weight; Height; BMI.

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Introduction

Breastfeeding is the most natural nutrition of the child at birth and the following early months of life. It is a determinant of the Body Mass Index (BMI) of the child then and in the feature. According to Uwaezuoke, Eneh and Ndu (2017) "the first 1000 days of life spanning from conception to the second birthday is the most critical period in life because it has an extensive influence on the child's growth, learning and survival potentials". Nutrition at this stage is not only concern with body mass index but also the cognitive, immunity and health of the child. Breastfeeding merely means the feeding of the baby with the mother's breast milk. Duration of breastfeeding differs from mother. Breastfeeding is an unequalled way of providing ideal food for the health, growth and cognitive development of infants; and it offers many advantages for children that cannot be duplicated by any other form of feeding. Extensive research, especially in recent years, has reported on various advantages of breastfeeding practices to infants, mothers, families, and society. The newborn gastrointestinal system at birth is incapable in terms of functionalities especially as they lack some enzyme necessary to digest adult food especially before the first 4-6months and from the 6months of life breast milk obviously would have become inadequate to meet the baby's nutritional demands needed for developmental milestones activities of play (Kozier & Erbs, 2015).

Duration of nursing/breastfeeding is influenced by many factors which include health of the mother, socio-economic background of mother, overweight of mother. Others include mothers stopping of breastfeeding due to embarrassment in public environment/places and protecting the breast shape. This study arises from conflicting reports of the effect of breastfeeding on body mass index in relation to nutrition status. "Childhood obesity represents an important risk factor for cardiovascular diseases" (Ardakani, Poshti & Poshti, 2021). Simultaneously, short time breast feeding duration could cause malnutrition through deprivation of minerals, vitamins (Oyango et al., 2019). According to Armstrong and Reilly (2017), the association between childhood and breastfeeding is inconclusive.

Research Questions

The following research questions were generated to guide the study:

1. To what extent will 24 months duration of breastfeeding predict the weight of 0-24months children?
2. To what extent will 0-6 months duration of breastfeeding predict the height of 0-24months children?

Hypotheses

The following null hypotheses were formulated and tested:

1. Duration of 24 months breastfeeding will not significantly predict the height of 0-24 months children
2. Duration of 0-6months breastfeeding will not significantly predict the height of 0-24months children in Delta State.

Methods

The population for this study consisted of breastfed children within their 24 months of age whose mothers registered in the 473 Primary HealthCare Centres (Urban and Rural) in

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Delta State. The population included mothers and children within two (2) years of life attending the Primary Health Care Centres in Urban and Rural areas of Delta state. The sample size for this study was 631 based on the estimated population of 687,571 from the table of kreije and Morgan (1970). A systematic sampling technique was adopted for the study to obtain 154 primary health care centres out of 473, which was used for the study.

From the record of the registered mother – child pair in each centre for that day, the researcher selected respondent at an interval of one (1) or take the respondents at every odd number to get to the total number of respondents. This process was replicated in all the primary Health Care Centres until the sample size of 631 is obtained.

A questionnaire which contains items on selected demographics data, items on duration of breastfeeding, and items on anthropometric indices was the instrument for the study. It is a three-part questionnaire. Section A is concerned with biodata of respondents such as baby's age, mother's age when breast feeding was initiated. Section B was designed to elicit responses to open-end questions. Stadiometer either standardized or improvised was used to measure the children's height. The record was carefully plotted on the Growth- to- Health Charts. Weighing scale that are functional and calibrated to the zero pointer was employed in the estimation of the babies' weight and the weighing was done on the same time of the day with minimal or no clothing. An interview instrument was used as additional tool for data gathering. The instrument was evaluated and vetted for face and content validity by the research experts in Health and Safety Education and Measurement and Evaluation. The test-retest was first used to calculate the correlation coefficient. Then Test of Error in Measurement (TEM) was then calculated to establish the reliability of the instrument. Their responses were collated and calculated using Test- retest and the reliability was 0.87. The researcher and two (2) research assistants were involved in the gathering of data using both interview and questionnaire tools of data collection.

Obtained data were analysed, using descriptive statistics of mean and standard deviation. Inferential Statistic of multiple regression was used to test the hypotheses raised at 0.05 level of significance.

Results

RQ 1: To what extent will duration of 0-24months breastfeeding predict the weight of 0-24months children?

Table 1: Correlation Analysis on relationship on duration of 0-24months breastfeeding predict the weight of 0-24months children

Variables	N	Mean	SD	R	r^2	r^2%
Weight of Children	591	44.60	1.35	.109	.012	1.2
Duration of 0-24months breastfeeding	591	44.62	10.10			

Independent Variable: Duration of 0-24months breastfeeding, Dependent Variable: Weight.

Table 1 reveals the descriptive statistics output and the linear correlation results, it showed that weight: N =591, Mean = 44.60, SD = 1.35 and duration of 0-24months breastfeeding N = 591, Mean = 44.62, SD = 10.10, the table showed that .109 is the extent of prediction between duration of 0-24months breastfeeding and weight. The coefficient of determination was .012 and the contribution of duration of 0-24months breastfeeding towards weight of children is 1.2%. Therefore, the result showed a positive relationship between

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duration of 0-24months breastfeeding and weight of children. Hence duration of 0-24months breastfeeding contribute to weight of children.

RQ 2: To what extent will duration of 0-6 months breastfeeding predict the height of 0-24months children?

Table 2: Correlation Analysis on relationship on duration of 0-6months breastfeeding predict the height of 0-24months children

Variables	N	Mean	SD	r	r^2	r^2%
Height of Children	591	43.85	7.32			
				.036	.001	0.1
Duration of 0-6months breastfeeding	591	37.98	9.85			

Independent Variable: Duration of 0-6months breastfeeding, Dependent Variable: Height.

Table 2 shows the descriptive statistics output and the linear correlation results, it revealed that height: N =591, Mean = 43.85, SD = 7.32 and duration of 0-6months breastfeeding N = 591, Mean = 37.98, SD = 9.85, the table showed that .036 is the extent of prediction between duration of 0-6months breastfeeding and height. The coefficient of determination was .001 and the contribution of duration of 0-6months breastfeeding towards weight is 0.1%. However, the result showed a positive relationship between duration of 0-6months breastfeeding and height. Hence duration of 0-6months breastfeeding do not contribute to height of children.

Hypothesis 1: Duration of 0-24months breastfeeding will not significantly predict the weight of 0-24 months children

Table 3: Regression Analysis on the duration of 0-24months breastfeeding predicting the weight of 0-24months children

Anova

	Sum of square	Df	Mean square	F	Sig
Regression	12.595	1	12.595	7.017	.008
Residual	1057.165	589	1.795		
Total	1069.760	590			

Coefficient

	Unstandardized coefficient		Standardized coefficient	T	Sig
	B	Std. Error	Beta		
(Constant)	43.955	.250		175.976	.000
Duration of 0-24months breastfeeding	.014	.005	.109	2.649	.008

P ≤ 0.05 level of significance; N = 591

Table 3 reveals the regression output of linear relationship between duration of 0-24months breastfeeding predicting the weight of 0-24months children. The calculated F (1, 589) = 7.017, P= 0.05. Therefore, the null hypothesis which states that duration of 0-24months breastfeeding will not significantly predict the weight of 0-24months children in Delta State. This result indicated that duration of 0-24months breastfeeding significantly predict the weight of 0-24months children. The Unstandardized regression coefficient (B) for predicting weight from duration of 0-24months breastfeeding was 0.014; the Standardized regression coefficient

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(β) was 0.109 while t = 2.649. Hence, duration of 0-24months was significant at P-value of 0.05.

Hypothesis 2: Duration of 0-6months breastfeeding will not significantly predict the height of 0-24 months children

Table 4: Regression Analysis on the duration of 0-6months breastfeeding predicting the height of 0-24months children

Anova

	Sum of square	**Df**	**Mean square**	**F**	**Sig**
Regression	40.535	1	40.535	.756	.385
Residual	31586.112	589	53.627		
Total	31626.647	590			

Coefficient

	Unstandardized coefficient		**Standardized coefficient**	**T**	**Sig**
	B	**Std. Error**	**Beta**		
(Constant)	44.866	1.201		37.357	.000
Duration of 0-6 months breastfeeding	-.027	.031	-.031	-.869	.385

P ≤ 0.05 level of significance; N = 591

Table 4 reveals the regression output of linear relationship between duration of 0-6 months breastfeeding predicting the height of 0-24months children. The calculated F (1, 589) = .756, P= 0.05. Therefore, the null hypothesis which states that duration of 0-24 months breastfeeding will not significantly predict the height of 0-24 months children. This result indicated that duration of 0-6months breastfeeding do not significantly predict the height of 0-24 months children in Delta State. The Unstandardized regression coefficient (B) for predicting height from duration of 0-6months breastfeeding was -.027; the Standardized regression coefficient (β) was -.036 while t = -.869. Hence, duration of 0-6months was not significant at P-value of 0.05.

Discussions

The findings of hypothesis one indicated that 24 months of duration of breastfeeding significantly predicts children's weight. The findings of this study align with those of Kim et al. (2019) and Tully, Stuebe, and D'Angelo (2020), who significantly predicts the weight of children. The results demonstrated that breastfed for a minimum of nine months exhibited a reduced occurrence of weighty and obesity by the age two, in contrast to those weaned earlier. The authors suggested that breastfeeding could enhance metabolic health, potentially affecting weight regulation processes. Rojas, Moreira, and Silva (2019) indicated that children breastfed wholly for initial six (6) months to twenty-four (24) months demonstrated notably lower mean (BMI) scores in comparison to those not breastfed or breastfed for lesser/shorter periods. This study's findings are inconsistent with those of Quigley, Kelly, and Sacker (2019), who performed a longitudinal analysis tracking a cohort of children to examine health outcomes linked with breastfeeding duration.

The result of hypothesis two showed that duration of 0-6months breastfeeding do not significantly predict the height of children. The findings of this study agree with the results of study conducted by Yi (2020) who that breastfeeding had positive effects on overall health, its

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duration in the first six (6) months had no effect on height at later stages. In support of this finding is Kramer, Kakuma and Ebrahim (2020) study that observed no differences in height measurements by the time children reached two years, concluding that factors beyond breastfeeding duration, including genetic predispositions and environmental factors, had a more substantial impact on height while the result of this study contradict the findings of analysis by Horta, Loret-de-Mola and Victora (2017) who found that children breastfed for six (6) months or lengthier, exhibited superior growth outcomes to shorter breastfeeding durations. The findings of this study also contradict the result of Olatunji, Babatunde and Adewunmi (2020) who found that six (6) months of limited breastfeeding/ nursing was linked with an increase in height that was statistically significant after controlling for socio-economic factors.

Conclusion

Based on the findings of this study, it was concluded that the duration of 0-24 months breastfeeding significantly predict the weight of 0-24months children in Delta State. Also, the duration of 0-6 months breastfeeding does not significantly predict the height of 0-24months children in Delta State.

Recommendations

Based on the findings of this study, it is hereby recommended that:

1. Mothers should endeavour to breastfeed their baby up to 0-24months for their baby to gain weight.

2. Breastfeeding exclusively during the first six months, then continue to breastfeed for at least another year while also providing suitable complementary foods. Breast milk promotes healthy development and growth, especially in the first few months of life, thanks to its composition that includes antibodies, bioactive chemicals, and vital minerals.

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