A Cross Sectional Study to Determine the Association of Maternal Nutritional Status Risk Classification Based On MAMI with Birth Weight

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ABSTRACT

Introduction

Birth weight is a predominant factor responsible for child survival. Low birth weight is an independent risk factor for development of Malnutrition in the children. Maternal anthropometry and her nutritional intake diversity before and during pregnancy are critical factors influencing birth weight. Maternal nutritional status is related to age, height, BMI ,Presence of anemia ,MUAC, other medical illnesses and mental health.

Method

After the institutional ethics committee clearance, Data of post natal mothers regarding age, history of associated chronic illness Pre pregnancy weight , height, BMI , MUAC, Hemoglobin ,Mental health

assessment which includes PHQ 2 score and risk classification is done as not at nutritional risk ,at some nutritional risk at severe nutritional risk which was based on MAMI classification of Mothers at nutritional risk with Birth weight is collected during the study period from APRIL 2023 to MAY 2023 and interpreted by statistical analysis

Results

Out of 75 Mothers included in the study, mean age at pregnancy was 23years,

Mean height 143cms with standard deviation of 5.1

Mean weight of 44kg with standard deviation of 5.25.

Mean BMI of 23.48 with standard deviation of 3.83,

Mean MUAC 23.85 with standard deviation of 2.23.

Mean HB of 10.0 gm/dl with standard deviation of 1.15. mean birth weight 2.52kg with standard deviation of 0.36.

28% of the subjects were at risk of depression disorder based on PHQ 2 Scores.

Low birth weight was 54.7%,Normal Birth weight were 45.3%

Mothers at Severe nutritional risk ,at some nutritional risk and no nutritional risk were 2.7% ,94.7% and 2.7% respectively and low birth was observed as 100%,47%% and 50% among them respectively.

Conclusion:

From our study we conclude that there is significant association between maternal nutritional status with birth weight of the baby.

Keywords: Birth Weight, Maternal Nutritional status, MAMI

INTRODUCTION

Birth weight is a predominant factor responsible for child survival. Low birth weight is an independent risk factor for development of Malnutrition in the children. India is the home of the highest number of malnourished children. Globally among infants under 6 months, 18% are born low birth weight, 20% are underweight 21% are wasted and 17% are stunted Infants under 6 months make around 20% of global burden of Severe Acute Malnutrition. [1] According to the World Health Organization (WHO), low birth weight babies are those who are born with less than2500g. Women of reproductive age are more prone to nutritional insufficiencies, especially those from rural areas, as improper food intake, inadequate quality of diet, recurrent infections, and less duration of the inter- pregnancy interval are some of the most important contributors of maternal as well as newborn malnutrition.[4] Further, maternal anthropometry and her nutritional intake diversity before and during pregnancy are critical factors influencing birth weight. Previous studies regarding maternal nutritional status and association with birth [7].Weight were described involving Age , Anthropometric parameters for mothers but classification of risk factors severity is not studied Maternal nutritional status is related to Age, Height ,BMI ,Presence of Anaemia ,MUAC, other medical illnesses and mental health.

In our study we classified the severity of the factors effecting maternal nutritional parameters and associated medical illness and mental health in mother which was based on MAMI (Management of at-risk Mothers and Infants under 6 months)[8]

SOURCE OF DATA

Vani Vilas hospital, Bangalore Medical College and Research Institute.

METHOD OF COLLECTION OF DATA:

Data is collected from the postnatal mothers admitted to vanivilas Hospital.

A. DESIGN OF STUDY

Institution based cross-sectional concurrent quantitative study.

B. STUDY PERIOD: APRIL 2023 – MAY 2023

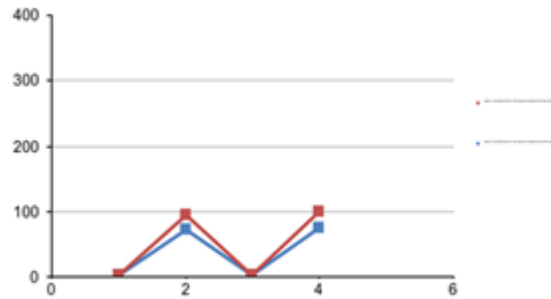**C. PLACE OF STUDY:** Department of Pediatrics, Vani Vilas Hospital, BMCRI, Bangalore.

RESULTS

Out of 75 Mothers included in the study, mean age at pregnancy was 23years,

Mean height 143cms with standard deviation of 5.1,Mean weight of 44kg with standard deviation of 5.25.

Mean BMI of 23.48 with standard deviation of 3.83,Mean MUAC 23.85 with standard deviation of 2.23.

Mean HB of 10.0 gm/dl with standard deviation of 1.15. mean birth weight 2.52kg with standard deviation of 0.36.

28% of the subjects were at risk of depression disorder based on PHQ 2 Scores.

Low birth weight was 54.7%,Normal Birth weight were 45.3% Mothers at Severe nutritional risk ,at some nutritional risk and no nutritional risk were 2.7% ,94.7% and 2.7% respectively .

TABLE 1: DISTRIBUTION OF THE SUBJECTS BASED ON NUTRITIONAL RISK

Nutritional risk	Frequency	Percent
At severe Nutritional risk	2	2.7
At Some Nutritional Risk	71	94.7
Not at nutritional risk	2	2.7
Total	75	100.0

Pearson correlation of birth weight with Maternal BMI and Haemoglobin with p value of 0.32 and 0.003 which is statistically significant.

TABLE 2: PEARSON'S CORRELATION BETWEEN MUAC, BMI, HB WITH BIRTH WEIGHT

	Birth Weight Vs		
	MUAC	BMI	Haemoglobin
r value	-.004	.249	.336
p value	.975	.032*	.003*

Among the mothers with severe nutritional risk low birth weight babies were 100%.Among mothers with some nutritional risk association of low birth weight was 53% and with Normal Birth weight were 47%,among mothers with no nutritional risk low birth weight were 50%.

TABLE 3: ASSOCIATION BETWEEN NUTRITIONAL RISK, PHQ 2 SCORES WITH BIRTH WEIGHT

			Birth Weight		Total	Chi-square value	p value
			LBW	Normal			
Nutritional risk	At severe Nutritional risk	Count	2	0	2	1.71	0.424
		%	2.7%	0.0%	2.7%		
	At Some Nutritional Risk	Count	38	33	71		
		%	50.7%	44.0%	94.7%		
	Not at nutritional risk	Count	1	1	2		
		%	1.3%	1.3%	2.7%		
PHQ2	.0	Count	12	14	26	1.22	0.54
		%	16.0%	18.7%	34.7%		
	1.0	Count	17	11	28		
		%	22.7%	14.7%	37.3%		
	>3	Count	12	9	21		
		%	16.0%	12.0%	28.0%		

DISCUSSION

The mean age at pregnancy from the present study was 23 years which was comparable with other study done by Sanghi R et al[1] of mean age of mothers was 23 years.

Anthropometric measurements of mother weight, height, BMI with mean values of 44,143,23.4 respectively compared to study done by Sanghi R et al mean values were 58,153,27.

Pearson correlation of birth weight with Maternal BMI and Hemoglobin with p value of 0.32 and 0.003 which is statistically significant. A significant association of maternal MUAC and the baby's birth weight was detected in study conducted by Yelly et al.[5] in contrast to our study where there is no significant association between MUAC and the Birth weight.

Mothers with high risk for depression disorder there is 57% of low birth, based on PHQ 2 scoring with p value of 0.5 which is not statistically significant.

Among the mothers with severe nutritional risk low birth weight babies were 100%. Amongst mothers with some nutritional risk association of low birth weight was 53% and with Normal Birth weight were 47%, among mothers with no nutritional risk low birth weight were 50%.

CONCLUSION

From the current study we conclude that there is significant prevalence of malnutrition among mother among 75 cases 94% were under Some nutritional risk. Among the mothers with nutritional risk there is statistically significant association with the low birth weight. There is no statistically significant association between MUAC of the mother and birth weight. There was no association of low birth weight with risk of depression in mother.

Hence assesment of maternal nutritional status and risk classification can be predictor of birth weight.

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