

Assessment of Complications associated in Malnutrition among Pregnant women visiting Maternity ward of South Indian Teaching Hospital

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Abstract- Background - Maternal nutrition remain as one of the major public health problem in Hyderabad-Karnataka region even after the various developmental programs, nutritional missions, awareness camps and pilot projects by central government as well as state government.

Introduction - The development of an Offspring depends on the anabolic process of pregnancy and catabolic process of maternal Nutrients. Inadequate supply of nutrients from mother to fetus or inadequate intake of nutrients by mother at the time of pregnancy may delay the developmental process of offspring and result complications.

Objectives - The purpose of study is to assess the complications associated with maternal malnutrition.

Methodology - A Prospective Observational cohort study was carried on 164 pregnant women in GIMS Hospital Kalaburagi from October 2017 to March 2018. The assessment of Nutritional status is carried through some essential parameters – Hemoglobin range, Anthropometric details, Demographic details, Socio Economic details, USG reports and Previous History. The complications due to Malnourishment are assessed by Post-partum and Pre-partum Changes.

Results – Findings of our study revealed IUD (48), Preterm, IUGR, and LBW (88) –under Post-partum complications and Eclampsia and Pre Eclampsia (28) – under Pre-partum complications of malnourishment in pregnant women.

Conclusion – A high prevalence of Malnourishment is observed in pregnant women, further undergoing complications before and after conception. A better understanding of the relationship between Partum complications and Socio, Demo, Anthro and Economy details is critical for planning effective intervention to improve maternal nutrition and good fetal outcome.

Index Terms- IUGR, Preterm, LBW, Eclampsia, Offspring, Post – Partum.

I. INTRODUCTION

TDefinition-

The term Malnutrition is defined as “Bad Diet”. Traditionally it was assumed to refer to a diet lacking in calories, proteins, minerals, or micronutrients; in recent decades, it increasingly

applies to a diet high in fats, sugar and salt. Hence malnutrition may refer to having a poor diet – this may be having too little or too much.^[1]

Women are more malnourished than men, because of including women’s reproductive biology, low social status, lack of education and poverty.^[2] If a woman is malnourished during pregnancy or if her child is malnourished during the first two years of life, the child’s physical and mental growth and development will be slowed. This cannot be corrected when the child is older – it will affect the child for the rest of his or her life.^[3]

Classification

World health organisation (WHO) classified malnutrition into 3 broad groups of conditions :

1. Under nutrition – which includes wasting(low weight-for-height), stunting(low height-for-age) and underweight(low weight-for-age).
2. Micronutrient-related malnutrition– which includes micronutrient deficiencies (a lack of important vitamins and minerals) or micronutrient excess.
3. Overweight, Obesity and diet-related Non-Communicable diseases (such as heart disease, stroke , diabetes and some cancers).^[4]

Malnutrition commonly affects all groups in a community, but infants and young children are the most vulnerable because of their high nutritional requirements for growth and development. Another group of concern is pregnant women, given that a malnourished mother is at high risk of giving birth to a LBW baby who will be prone to growth failure during infancy and early childhood, and be at increased risk of morbidity and early death. Malnourished girls, in particular, risk becoming yet another malnourished mother, thus contributing to the intergenerational cycle of malnutrition.^[5]

However, approximately 303,000 women and adolescent girls died as a result of pregnancy and childbirth-related complications due to malnutrition in 2015.^[6]

As the term malnutrition generally refers both to undernutrition and overnutrition, but in our study we use the term to refer solely to a deficiency of nutrition in pregnant women.

Complication of Malnutrition at Pregnancy

1. Low Birth Weight.
2. Preterm Birth.
3. Spontaneous abortion and still birth.
4. Intra uterine growth retardation (IUGR).
5. Congenital Malformations.
6. Maternal anemia.
7. Eclampsia and Pre-Eclampsia.^[7]

Risk factors of Maternal Malnutrition

1. Adolescent Birth rate 15-19years.
2. Birth Interval < 24months.
3. Female short stature.
4. Anemia in pregnancy.
5. Female obesity.
6. Hypertension.^[8]

Objective

To assess the complications associated with malnutrition and determine the factors associated with its underlying reasons in pregnant women.

II. MATERIALS & METHODOLOGY

The study was conducted at Gulbarga Institute of Medical Sciences (GIMS), Kalaburagi, India. This 650-bed tertiary hospital draws patients of diverse socioeconomic status, from urban slums to high-income residential areas. The institutional ethical review board of GIMS Kalaburagi approved all study

procedures and a written and signed consent was obtained from each study participant at enrollment.

A. Study design

This was a prospective observational cohort study were a pregnant women considered as Malnourished, based on following parameters with an inclusion criteria - age of 17–40 years and at, 13 week of gestation to 3months age of an infant, registered for antenatal screening at the Department of Obstetrics and Gynecology in GIMS, were invited to participate in the study. As a tertiary referral hospital, pregnant women of the obstetrics clinic are a mix of normal and referral or complicated.

Therefore, exclusion criteria—such as women with multiple fetuses; with a clinical diagnosis of chronic illness such as diabetes mellitus, hypertension, heart disease, and thyroid disease; with a positive test result for hepatitis B surface antigen, HIV, or syphilis infection (venereal disease) were applied.

Although this may have resulted in a sampling bias, our intention was to study apparently the complications during pregnancies from the Second trimester to infant till 3months along with a careful characterization of the pregnancy outcome.

The data was secondary collected through interviewing the parents of the patients. The triggering points were included such as mode of eating and balanced diet knowledge. Evaluating the current practice of malnutrition in pregnant women and infants by comparing IOM, CDC and WHO guidelines.

Parameters considered as factors & cofactors for malnourishment in pregnant women –

[Table no. 01]

Maternal factors	Child factors	Socio Economic factors
Age - <18yrs	Body Mass & height of child – as per WHO guidelines	Economic status - < Poverty
Weight - <50kgs & >75kgs Per Trimestral weight as per IOM guidelines	Gestational week of child birth -< 36 gestational week	Locality- Rural/urban
BMI- <18.5 & >25		Educational qualifications- illiterate/literate
Haemoglobin- < 8gm/dl		
No. of Partitions - >3		
Duration between Parity - < 12months		
Type of delivery - LSCS/NVD		
Placental weight - <500gm		
USG reports - as per CDC guidelines		

In our study the Pregnant women is considered as Malnourished with at least 3 out of 7 factors (Age, Weight, BMI, Hb, USG reports, BM & height of child, Gestational week of child) and with at least 3 out of 7 cofactors (Multiparity, Interparity, Delivery Status, Placenta wt., and Socio Economic status).

III. RESULTS

In our study out of 164 subjects of Malnourished pregnant women in a total, among them 136 cases are reported with Post-partum complications and 28 cases are reported with Pre partum complications.

The subjects with both Pre partum and Post-partum complications are reported individually to prevent bias.

A. Post-partum – 136 cases

[Table no. 02]

S no.	Complication	Cases collected
1.	IUD (Intra uterine death)	48 cases
2.	Preterm Low Birth Weight (LBW) Intra uterine growth retardation (IUGR)	88 cases

1. Post-partum - IUD (Intra uterine death) – 48 cases

[Table no. 03]

S no.	Complication	Cases collected	Causes
1.	Placental Abruption	24 cases	Deficiency of Vit-B6,B9,B12, minerals
2.	Eclampsia & Pre Eclampsia	8 cases	Increased levels of Minerals –Na, Ca & K
3.	Inter parity malnourishment	7 cases	Less duration between each parity
4.	Anemia (low Hb)	4 cases	Deficiency of Iron & Vit B9
6.	Congenital disorders	5 cases	Deficiency of Vit-A C E

2. Post- partum - Preterm, LBW, IUGR - 88 cases

[Table no. 04]

S no.	Condition	Cases collected
1.	Full-term & Low Birth Weight	15 cases
2.	Pre-term & Low Birth Weight	40 cases
3.	Intra uterine growth retardation (IUGR)	20 cases
4.	IUGR & Pre-term & LBW	13 cases
5.	IUGR & Full-term & LBW	-

B. Pre-partum - Eclampsia & Preeclampsia – 28 cases

[Table no. 05]

S no.	Condition	Cases collected
1.	Eclampsia	22 cases
2.	Pre Eclampsia	6 cases

IV. DISCUSSION & SUMMARY

Our study was conducted in District Hospital, Kalaburagi with a total of 164 malnourished pregnant women who are considered as subjects of our study and collected there socio economic, demographic and anthropometric details respectively. As the study duration was from October 2017 – March 2018 with a Prospective Observational study, the subjects are concluded as malnourished with the data obtained from [Table no- 01].

Further, 164 subjects with malnourishment are reported with complications during the time of pregnancy and at the time of delivery which are categorized into two sections- Pre-partum and Post-partum complications with 28 and 136 subjects respectively.

Out of 136 subjects with Post-partum complications, 48 pregnant women were seen with the complication of IUD and the other 88 pregnant women with Preterm delivery, LBW child, and IUGR.[Table no:02]

Findings of our study showed that out of 48 Intra Uterine Deaths, 24 cases were reported with the complication of placental abruption, followed by 8 cases of Preeclampsia and Eclampsia and 7 cases of inter parity malnourishment [Table no.3] this is due to the deficiency of required quantity of Vitamins (B6,B9,B12) ,increased levels of sodium and potassium ,less duration between each parity respectively when further undergone with specific investigations to evaluate the cause of IUD. The Remaining 88 subjects of Post-partum complications were collectively reported with Preterm birth, Low Birth Weight, and Intra Uterine Growth Retardation (IUGR) [Table no-04].

Out of 28 subjects with Pre-partum complications, 22 cases were identified with Eclampsia and 6 cases with Preeclampsia which further investigated for determination of malnourishment.

The Parameters considered as factors of malnourishment is Primitive step in determining the malnourishment and evaluating the complications due malnourishment. This was obtained from various studies conducted by Jang Bahadur Prasad, Roland Andersson and Staffan Bergstron, Salynn Boyles, Shegufta S Sikder, Yael Baumfeld, and Kathleen Abu-Saad,

Hence the study data illustrated the importance of risk at the time of pregnancy with malnutrition and its following outcomes.

The strength of our study is that we correlated all the factors that may cause the malnutrition along with the complications reported during pregnancy and after delivery. The study strengths comprise of it being a large population based study conducted in a single center with little loss to follow up since our center is the sole Government tertiary medical center in the Mid HKE region.

Limitations of our study are lack of systematic analysis to determine the probability value by using Data analysis softwares.

V. CONCLUSION & IMPLICATIONS

We conclude that higher prevalence of Malnutrition in pregnant women is observed in Kalaburagi region, related to age, multiparity, interparity, BMI, habit, occupation, and diet resulted in complications such as LBW, preterm, stillbirth, IUD, IUGR, and congenital disorders in offspring . More large multicentre clinical trials are necessary to establish the Malnutrition as clinical involvement in human health and disease. The present study adds to current scientific information regarding prevalence of nutritional deficiency in apparently healthy pregnant women. However the study is limited considering only prevalence of nutritional deficiency and a longer and detailed follow up is required to assess the effect on maternal and neonatal outcome.

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