

Birth Weight of New Born In Relation to Mothers Food Habits Maternal Weight Gain and Hemoglobin Level

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Abstract – Poor dietary status and insufficient food admission during and preceding pregnancy impacts ladies' wellbeing as well as contrarily affect development and advancement of baby. The birth weight of baby is a strong indicator of development and endurance of newborn child and is subject to maternal wellbeing and healthful status. Maternal nourishing status, pre-pregnancy weight, weight list (BMI), and gestational weight gain all are emphatically connected with fetal development and advancement. An aggregate of 80 mother-newborn child sets conveyed in a sub-locale emergency clinic of Agra were met. Anthropometric estimations, including maternal weight, tallness, weight – files, all out weight gain in pregnancy and baby's birth weight were recorded and all mothers were met for their profile social factors. Factual investigation was finished by utilizing statistical strategy to contrast the danger factors and with break down the impact on birth weight. A sum of 63.33% (50) new born was low birth weight, and rests 36.66% were typical. 68 % (34) of low birth weight was expected to preterm birth and simply 32 % were because of IUGR. Almost 50% of the mothers of low birth weight children had low weight file during and before pregnancy. Mean birth weight was around 2.463 gms. Low birth weight and maternal Hemoglobin status was reliant to one another. BMI and birth weight were additionally fundamentally related. We inferred that birth weight was low in undernourished pregnant ladies and ladies with low Hemoglobin level are at expanded danger of having low birth weight infants. Maternal wellbeing during and before pregnancy is straightforwardly connected with the birth weight of newborn child. So wellbeing arrangements ought to focused on early recognition and viable administration of under nourishment to lessen the weight of Low birth weight and there is a need to zero in consideration on better maternal sustenance and schooling on birth dispersing, early pregnancy, family arranging and sustenance.

Keywords – Weight, Birth

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INTRODUCTION

The condition of maternal sustenance is one of the significant ecological elements which may be relied upon to impact the course of pregnancy. The development of fetal tissues and different results of origination and the metabolic changes subsequent on pregnancy force extraordinary pressure and result in an expansion in the eager mother's dietary necessities. Laborers in the fields of nourishment and maternal and youngster wellbeing from various areas of the planet have every once in a while demonstrated the nearby relationship between the maternal dietary status from one viewpoint and the strength of the pregnant lady and her posterity on the other.

Infants are the future, the fate of our families, our local area, our nation and our planet. Nobody could find a more respectable task than giving every one of

them the most ideal beginning throughout everyday life.

A child's weight at birth is a solid mark of maternal and newborn wellbeing. As indicated by WHO, Health is a condition of complete physical, mental, enthusiastic and social prosperity and doesn't just allude to the shortfall of infection. It reflects concordance between body, mind, soul, society and biological system. The soundness of ladies and youngsters is interlinked. Sound mothers produce solid infants. Assuming a mother is solid she can adequately care for her youngster with energy. It is fundamental to guarantee that implies are accessible and help is given to ladies to bring forth sound infants and insignificant perils to their youngsters.

Hunger keeps on being a significant general medical condition in India. It is assessed that a

larger part of undernourished individuals on the planet live in the Indian subcontinent. Around 33% of the relative multitudes of infants in India are born with low birth weight. As pregnancy forces an extraordinary strain it is fundamental just as critical that mother leads sound life all through childbearing stage. One of the central points that advance the wellbeing and prosperity of the mother is healthy and sustaining diet. An appropriate dietary equilibrium is important to guarantee adequate energy consumption for satisfactory development of hatchling without drawing on mother's own tissue to keep up with her pregnancy.

An exemplary report by Burke (2016) in Boston showed that Infants born to ladies who had poor to exceptionally horrible eating routines during pregnancy were bound to be untimely, have innate deformities, or be as yet born.

Ladies who had eats less carbs that outfitted under 1500 calories and under 50gm protein had more noteworthy recurrence of confusions during pregnancy and of the new born. Rate of low birth weight is two and half times higher among pregnant ladies having under 1500 calories each day than among the individuals who had sufficient energy admission.

Destitution, deficient food admission, especially in later long periods of pregnancy and high prerequisite of energy by virtue of hard actual work hasten serious hunger which is by a wide margin the most incessant reason for low birth weight and fetal development hindrance from one side of the planet to the other. Maternal unhealthiness and the subsequent low birth weight newborn children stay the absolute most significant variable in baby bleakness and mortality on the planet and decrease in its rate has been named by WHO as one of the worldwide mark of progress. (Sharma and Mishra, 2017)

Concept of birth weight of newborn

Birth weight is viewed as one of the most significant and solid boundaries in the assessment of fetal and neonatal prosperity. Birth weight underneath 2.5kg (2500gm) has been viewed as firmly connected with helpless development, in earliest stages as well as all through the adolescence. Birth weight can be impacted by different elements including those connected with fetal, placental, maternal, and natural beginning. (George, et al, 2018)

Low birth weight newborn child is characterized as "the child whose birth weight is 2500gm or less independent of the gestational age". Low birth weight is related with coronary illness, stroke, and diabetes in grown-up life and unhealthiness in early life might influence the creating mind. (Dutta, 2019) According to WHO, infants with a birth weight of 2500gm or less ought to be assigned as low birth weight children?

The term, exceptionally low birth weight, eludes to a birth weight among 1000gm, and very low birth weight to a birth weight under 1000 gm and the term, miniature preemie, is being applied for children underneath 500 gm birth weight.

Worldwide situation of Low Birth Weight children

The occurrence of low birth weight, characterized as the extent of newborns weighing less than 2,500 grams, is observed through both wellbeing framework observation and family reviews. In 2013, almost 22 million newborns - an expected 16 percent of all infants born universally that year - had low birth weight. Precise observing is testing, be that as it may, since almost 50% of the world's babies are not weighed at birth.

Low birth weight occurrence and patterns:

Among locales, South Asia has the most noteworthy rate of low birth weight, with one out of four newborns weighing less than 2,500 grams. South Asia additionally has the most elevated pace of newborn children not weighed at birth, at 66%. In spite of the fact that information on low birth weight are acclimated to represent under-detailing, they are still prone to misjudge the genuine size of the issue in the area. (UNICEF)

Around the world, somewhere in the range of 20 million of the 129 million newborn children born in 1985 had low birth weight. Nineteen million of low birth weight babies are born in emerging nations. The rate of low birth weight newborn children isn't equally spread all over the planet. It goes from 4-5% in the most evolved nations to practically half in probably the most un-created nations. For the world overall the normal for 1986 was assessed to be 15.6%.

K. Park (2019), WHO assesses that all around the world around 25 million low birth weight children are born every year, comprising 14% of every live birth, almost 93% of them in non-industrial nations. The rate of low birth weight shifts generally between locales of the world, with levels of 27% in Southern Asia, 6% in Eastern Asia, 14% in Africa and 9% in Latin America. The table underneath shows rate of low birth weight infants in a few created and emerging nations.

The gravity of the issue has now been generally perceived at the 34th World Health Assembly, the part territories of WHO embraced, as a feature of the worldwide procedure for "Wellbeing for All constantly 2000", the extent of newborn children born with a low birth weight as one of the worldwide pointers with which to screen progress. The objective was decrease in the frequency of low birth weight to fewer than 10%.

Birth weight is the main determinant of perinatal result. Overall in excess of 20 million infants are born every year with Low Birth Weight. This addresses 15.5% of all births. In India, 8 million children are born with low birth weight. These kids as a rule require hospitalized care.

Indian situation of Low Birth Weight children:

Baby who weighs under 2500gms at birth address around 30% of all live births in India every year. The greater parts of these are born at term. The objective of the public wellbeing strategy is to diminish the frequency of low birth weight infants in the country to 18% continuously 1990 and 10% constantly 2000 alongside the strategies created to accomplish wellbeing for all by 2000 AD.

Dutta (2018), the occurrence of low birth weight child is 30-40% in the agricultural nations. As such the frequency of preterm child is around 20-25%.

Causes of Low Birth Weight (LBW):

Low birth weight is fundamentally brought about by untimely birth. Since children fill a great deal in the later phases of pregnancy, many infants born before the 37th week are little, or have LBW.

LBW may likewise be brought about by:

- issues with the placenta, or intrauterine development limitation (IUGR)
- entanglements with the pregnancy
- insufficient weight gain by the mother
- birth surrenders

Poor maternal nourishment, deficient pre-birth care, or medication or liquor maltreatment by the mother can likewise cause LBW.

WEIGHT GAIN DURING PREGNANCY:

Maternal weight gain during pregnancy is an indicator of newborn child birth weight. Weight gain during pregnancy is pivotal in the assurance of fetal development. Consequences of the examinations led by before examinations shows that outrageous weight gain during pregnancy is possibly unsafe. WHO recommends that evaluation of the speed or augmentation of weight gain in the second and third trimester of pregnancy is fundamental for observing intrauterine development?

The weight gain is accounted by the weight of the full term baby, the increment in the size of uterus, the placenta, amniotic liquid, bosom tissue, growing blood dissemination and the stores of nitrogen and

lipids that assistance to address the issues during parturition and lactation.

The gain in weight for a solid lady who enters the pregnancy at a typical weight for her tallness and body casing ought to be normal 11kg (24 pounds). Gain in weight shifts broadly, being fairly more noteworthy in young ladies than in the people who are more seasoned, and more prominent in the individuals who are having their first children.

Naeye, (2018), revealed that the ideal weight gain during pregnancy, that is, the weight bringing about the least perinatal mortality, was connected with the lady's weight before pregnancy. These weight gains were 13.6kg (30 lbs) for the underweight lady, 9.1kg (20 lbs) for the lady of ordinary extents, and 7.3kg (16 lbs) for the overweight ladies.

For fat ladies, limitation of calorie admission to keep up with weight or even to free weight is not generally pushed. Despite the fact that stoutness builds the danger of pregnancy, the revision of it during pregnancy forces much more serious dangers on the embryo. Assuming that a lady is fasting or is confining her calorie admission, her blood glucose will be lower, glycogenesis will be decreased and ketosis will be expanded. With a diminished stock of glucose, the baby can't combine glycogen and fat. Ketosis might disrupt neurological turn of events.

FOOD HABITS DURING PREGNANCY:

A solid eating routine is a significant piece of a sound way of life whenever, yet is particularly essential on the off chance that you're pregnant or arranging a pregnancy. Eating steadily during pregnancy will assist your child with creating and develop, and will keep you fit and well.

The term food habits (or dietary patterns) alludes to why and how individuals eat, which foods they eat, and with whom they eat, just as the manners in which individuals acquire, store, use, and dispose of food. Individual, social, social, strict, monetary, ecological, and political factors all impact individuals' dietary patterns.

Great food propensity (or smart dieting) is burning-through the right amount of foods from all food bunches to have a solid existence. A decent eating regimen is a dietary way of life that advances great wellbeing. A decent eating regimen should incorporate a few food bunches since one single gathering can't give all that human requirements to great wellbeing.

Awful food propensity (or Unhealthy eating) will be eating any food that isn't viewed as being helpful for keeping up with wellbeing. Unfortunate foods incorporate fats (particularly of creature beginning),

"quick" foods (which are low in fiber and nutrients), foods high in salt and tropical oils (e.g., seared potato crisps/chips), and cream-based ("white") sauces (which are high in fat).

Impacts of Micronutrients

In non-industrial nations there exist lifetime low admissions of micronutrients, so it is essential to save this low level of micronutrients before conception, yet expanded admissions in the blink of an eye previously and during pregnancy may likewise assists with expanding birth weight and endurance of babies. Minor components, fetal tissues and blood are corresponded with baby's weight and head perimeter.

1. Vitamin B₁₂

It is accounted for that the commonness of nutrient B₁₂ lack is high in Indian populace. Nutrient B₁₂ lack plays an expected part in hoisting plasma homocysteine level in pregnancy and ensnared for unfriendly pregnancy results as low birth weight. (Kramar, MS2017)

2. Iron

It is assessed that around half of ladies are as yet Iron inadequate in India. Since Iron prerequisite is expanded in pregnancy from 0.8-0.5mg/day in third trimester. Normal prerequisite in whole incubation is approx 4.4-5 mg/day. Helpless iron status might influence safe capacity and in this way increment have defenselessness to "genital parcel contamination" and furthermore increment oxidative pressure of placenta. Low hemoglobin status causes ongoing hypoxia. (Murphy,J 2018) A supplementation of 60 mg of ferrous iron and 0.4 mg of folic corrosive/day essentially expanded the birth weight . To acquire a most extreme impact on birth weight iron supplementation ought to be begun in early pregnancy .(Muthayya,S 2016) Iron and folic corrosive lack in early pregnancy is related with neurological imperfections .Iron inadequacy pallor has been demonstrated to be related with LBW and preterm infants and helpless iron status might influence invulnerable capacity and increment vulnerability to contaminations. (Supplementation of 60 mg of ferrous iron and 250µgm of folic corrosive two times every day is suggested)

3. Essential unsaturated fats

These are primary parts of lipid film and required for neural tissues improvement and are connected with weight and head periphery of newborn child at birth. DHA (docosahexanoic corrosive) and Arachidonic corrosive are fundamental long chain PUFA(poly unsaturated fats) that are significant primary parts of lipid layer of cerebrum and focal sensory system and are extremely basic for ordinary development and improvement. The creating human hatchling

amasses as much as 400 mg DHA/week in last trimester, the greater part of which is joined in to the primary lipid of creating mind. So it is critical that maternal micronutrient status and supply is satisfactory to help fetal necessity and the sufficient utilization of food source rich in both DHA and AA might be vital to keep up with their status in pregnancy. DHA affects endothelium and further develops the film receptor movement through the improvement in layer smoothness, so these unsaturated fats might increment fetal development rate by expanding placental blood stream.

Dietary admission of Nutrients

Dietary prerequisites are diverse during ahead of schedule and late pregnancy. Miniature supplements and protein needed in early pregnancy though calorie and different supplements later. A change in outlook from work to further develop size at birth to endeavors to work on fetal development and improvement. Pregnant ladies can adjust a wide assortment of food admission both in quality and amount. The overall commitment of calories and protein to expand birth weight relies upon the restricting supplements of home eating regimen. The child of ladies who has low pre pregnancy weight, less than stellar eating routine, low level of substitution of home eating regimen by supplements, low active work in pregnancy and chronic weakness status will show bigger expansion in birth weight/unit of supplementation.

Studies connected with Maternal Nutritional Status, Anthropometric Indices, and Weight gain during Pregnancy:

Judith E Brown, et al (2018), had made an endeavor to concentrate on the variety in new born size as per pregnancy weight change by trimester 1, 2, 3. The motivation behind the review was to recognize impacts of maternal weight change by trimester on new born size, under the theory that low weight gain right off the bat in pregnancy predicts proportionately more modest newborns. Ladies wanting to become pregnant were trailed by center visits and surveys through conveyance. The review incorporates 389 ladies and their singleton babies born at a gestational period of >241 d. The consequences of the review showed, maternal weight gain in the first and second trimesters anticipated new born weight (1 kg weight gain in the main trimester anticipated a 31 g expansion in new born weight, $P < 0.0007$, and 1 kg weight gain in the subsequent trimester anticipated a 26 g expansion in new born weight, $P < 0.007$), yet weight gain in the third trimester didn't. Newborn ponderal list (in kg/m³) was anticipated by weight gain the initial (1 kg weight gain anticipated an additional 0.21 units, $P < 0.0003$) and third (1 kg weight gain anticipated an additional 0.12 units, $P < 0.03$) trimesters yet not in the subsequent trimester. New born weight

was 211 g lower and ponderal list 1.2 units lower in newborn children born to ladies who shed pounds in the principal trimester. The review reasoned that the maternal weight change in the primary trimester of pregnancy more firmly impacts newborn size than loads change in the second or third trimester.

Leniency Paul and Vijayalakshmi Puroshotaman (2017), completed a review in relation to anthropometric boundaries to the pregnancy result. Mid arm boundary just as weight at term of 750 pregnant ladies were recorded and connected with the birth weights. Weight gain by 150 hopeful ladies north of a multi week time span during the third trimester was recorded to discover its relationship to the birth weight of the newborn. Mean month to month weight gain of less than 1 kg was utilized as remove highlights recognize pregnant ladies who were in danger. A determined week after week weight gain of under 0.3 kg predicts helpless pregnancy result uncovering that such ladies requires dietary intercession atleast during the third trimester. Around 19.47% of the pregnant ladies whose Mid arm perimeter was lesser than 20cm had brought forth low birth weight infants showing bring down the Mid arm circuit, and more unfortunate the pregnancy result.

Studies connected with food habits of mother during pregnancy:

Lagiou P, et al (2016), had made an endeavor to concentrate on the eating regimen during pregnancy in relation to maternal weight gain and birth size. The goal of the review was to analyze whether maternal energy-changed admission of micronutrients is related with either maternal weight gain or birth size boundaries. The subjects picked were 224 pregnant ladies coming for their first standard pre-birth visit. The ladies were finished conveyance. Pregnant ladies' dietary admission during the subsequent trimester was determined at the 27th seven day stretch of pregnancy through a food recurrence survey. The consequences of the review showed admission of neither energy nor any of the energy producing supplements was altogether connected with the birth size. Conversely, maternal weight gain before the second's over trimester of pregnancy was essentially connected with energy consumption just as energy-changed admission of protein, lipids of creature beginning and carbs. The review inferred that albeit maternal weight gain is unequivocally connected with birth size, the demonstrated dietary relationships with weight gain are not reflected in comparable relationship with birth-size boundaries.

Studies connected with mother's age, maternal wellbeing, sex of the child, different births and so forth:

Kapoor, et al (2017), completed a review on Low Birth Weight (LBW) in Rural Ballabgarh, Haryana. For this review, two sub place towns and two non-

subcenter towns under PHC Dayalpur were chosen by advantageous inspecting. Birth weights were recorded in the field utilizing Salter scale. They were approached to gauge the kid inside 48 hours of conveyance. All endeavors were made to gauge the youngster without garments. The mean birth weight was 2846gms \pm 378gms. The rate of LBW in the review region was 8.8% with just two newborns having a birth weight of < 1800gm. Birth weight had a typical dissemination which was slanted to left. There was a bunching of birth weight around 2500gms. There were all out of 38 preterm conveyances. Two of them were before 28 weeks of growth and one more before 32 weeks. Every one of the newborns with a gestational period somewhere in the range of 32 and 36 weeks had a birth weight over 2500 gms.

OBJECTIVE OF THE STUDY

1. To study the birth weight design.
2. To study the impact of maternal wellbeing on birth weight.
3. To study current status of rate of low birth weight.

RESEARCH METHODOLOGY

An aggregate of 80 mother-baby sets conveyed in a sub-locale Memorial Clinic, of Agra were met. Anthropometric estimations, including maternal weight, stature, body mass – file, absolute weight gain in pregnancy and baby's birth weight were recorded and all mothers were met for their profile social factors, past history of rashness or low birth weight, confusions and disease during pregnancy, subtleties of antenatal consideration, dietary daily schedule, sort of actual work and any bleak condition during and before pregnancy. Birth weight and sex of the new born, hemoglobin level of mother during and before pregnancy, pre-pregnancy weight and absolute maternal weight gain were obtained from the conveyance register accessible in the clinic.

Diet Survey

The dietary evaluation of the subjects was done and food admissions were gotten utilizing 24-hour review strategy. Testing questions were utilized to assist the subjects with recollecting all foods devoured typically. The data about the amount of column material for cooking just as prepared food was recorded as far as family gauges/numbers/to discover the quantum of line food admission. Dietary example was reviewed typical, great and poor , as the subject were followed 6 feast example and supplements utilization were considered acceptable and not palatable based on utilization of food stuffs from every food bunches in sufficient

amount. Measurable examination was finished by utilizing strategy to contrast the danger factors and with dissect the impact on birth weight. A chi-square test was utilized to decide if there was a critical relationship between BMI, Hemoglobin status, and birth weight.

DATA ANALYSIS

Among the 80 respondent concentrated on an aggregate of 63.33% (50) new born were low birth weight, and rest 36.66% were typical. 68 % (34) of low birth weight was expected to preterm birth and simply 32 % were because of IUGR. I likewise saw that as around 71 % mothers have low hemoglobin level (<11mg/dl) during and before pregnancy and they were undernourished. Almost 50% of the mothers of low birth weight infants had low weight record during and before pregnancy. Mean birth weight was around 2.463gms. Low birth weight and maternal Hemoglobin status was reliant to one another. BMI and birth weight were likewise fundamentally related.

Table1: Relationship between Low Birth Weight and Maternal Hemoglobin status.

HB level of Mother	Low Birth Weight (n=50)		X ²
	Preterm Birth	IUGR	
<11 mg/dl	30		4.5
>11 mg/dl	4		
Total	34		

$$P=0.005, X_2 \text{ Tab.}=7.879$$

Table 2: Relationship between Low Birth weight and BMI (Body Mass Index)

Body Mass Index of mothers	Low Birth weight(n=50)		X ²
	Preterm Birth	IUGR	
BMI<19.5 Kg/m ²	14		1.979
BMI>19.5 Kg/m ²	20		
Total	34		

$$P=0.005, X_2 \text{ Tab.}=7.879$$

CONCLUSION

Pervasiveness of low birth weight was seen as 63.33 % and of rashness was 68 %. We reasoned that birth weight was low in undernourished pregnant ladies and ladies with low Hemoglobin level are at expanded danger of having low birth weight infants. Maternal wellbeing during and before pregnancy is straightforwardly connected with the birth weight of baby. So wellbeing approaches ought to focused on early identification and compelling administration of under nourishment to diminish the weight of Low birth weight and there is a need to zero in consideration on better maternal sustenance and instruction on birth separating, early pregnancy, family arranging and sustenance. The control of related danger factors uncommonly extra dietary admissions, appropriate use of antenatal

consideration should be addressed on need premise to decrease the occurrences of low birth weight.

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