

# Weight Monitoring of Newborn In Relation to Diet of Mothers in Rural and Urban Areas

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**Abstract:** Present study was focused on the impact of different food groups on the weight of newborn. Comparison was done between rural and urban population to study the impact of different food groups on the body weight of newborn baby. The study was conducted both in rural and urban areas of Bhagalpur district. From both the areas, a total of two hundred newborns were selected, hundred from each. The information for the assessment of nutritional status of the pregnant and her newborn baby were recorded visiting different clinics/hospitals of Bhagalpur district time to time. The answers of women were recorded in the interview schedule. It was observed that the number of vegetarian pregnant was less in rural (44%) and urban (32 %) areas than non-vegetarians. Vegetarian pregnant gave birth to heavier child in rural (3.1 kg) and urban (3.3 kg) while non-vegetarian produced newborns of 2.8 kg in rural and 2.7 kg in urban areas. Carbohydrate rich diet was their staple food. Proteinous diet was also taken in good amount by a large number of respondents and whose intake was more, gave birth to a healthier baby in both rural and urban areas. When milk intake was at minimal level, the birth weight was reduced to underweight (2.1 kg) particularly in urban area. They were aware about the importance of green leafy vegetables and maximum of them were taking it daily (48%) while 36 percent of them were taking weekly and only 16 percent were neglecting it.

**Keywords:** Bhagalpur, newborn, nutrition, pregnant, birth-weight

## 1. Introduction

The weight recorded at the time of birth of a baby tells the story of nutrition taken by its mother during last few months and at the same time also forecasts about own future health (Baker *et al.*, 1993)<sup>[1]</sup>. The birth weight of a newborn is monitored by several factors among which one major one is diet. In the first trimester rate of foetus growth is slow and mother is unable to take much food due to nausea and vomiting. It is during the next two trimesters that the foetus grows rapidly and therefore the nutrient needs are increased. Poor nutrition during this period may lead to intrauterine and subsequent growth retardation of the foetus, high morbidity and high risk of maternal mortality. Good nutrition is the most important environmental influence for health throughout the whole life. Pregnancy, lactation and growing age are the three most demanding periods in human life when malnutrition is likely to occur due to unfulfilled dietary demands. Further, it is natural to suppose that malnutrition is more prevalent among the poorer section due to the restriction of diet imposed upon them by their poverty. As a result of this unfortunate combination of circumstances, the worst sufferers are the pregnant and nourishing women of the under privileged classes (Gopalan, 1983)<sup>[2]</sup>. On a global scale, the five principal nutrition deficiency diseases that are being accorded the highest priority action are kwashiorkor, marasmus, xerophthalmia, nutritional anaemia and endemic goitre (Bender, 1973)<sup>[3]</sup>. Fortunately, almost all of the nutritional diseases are entirely preventable.

On a broader aspect, food can be classified in two categories, i.e. vegetable foods and animal foods, generally known as vegetarian and non-vegetarian foods. Vegetable foods consists of cereals, pulses, nuts and oilseeds, vegetables and fruits while animal foods comprises milk, meat, fish and eggs. Different food items plays different role

during pregnancy. Present study was focused on the impact of different food groups on the weight of newborn. Comparison was done between rural and urban population with the following objective:

Studying the impact of different food groups on the body weight of newborn baby.

## 2. Methodology

The study was conducted both in rural and urban areas of Bhagalpur district. The rural areas selected were Rannuchak, Shahpur, Bhawnathpur, Hiranand and Bhatoria while the urban areas were Sahebganj, Patelnagar, Parbatti, Sarai and Barari. From both the areas, a total of two hundred newborns were selected, hundred from each. The information for the assessment of nutritional status of the pregnant and her newborn baby were recorded visiting different clinics/hospitals of Bhagalpur district time to time. The answers of women were recorded in the interview schedule. The body weight of child was recorded by automatic weighing machine of different types available in nourishing home/ hospitals.

## 3. Results

Starting from the broader classification of food groups, table 1 shows the effect of vegetarian and non-vegetarian diet taken by pregnant mothers of rural and urban areas on their newborn. The result of vegetarian and non-vegetarian diet was surprising. The newborn children of vegetarian mothers were heavier in both rural (3.1 kg) and urban (3.3) areas.

**Table 1:** Type of food influencing child weight, n=200

Type of food	Weight of child (mean ± SD), kg		Percent consumption (%)	
	Rural	Urban	Rural	Urban
Vegetarian	3.1 ± 0.6	3.3 ± 0.2	44	32
Non-vegetarian	2.8 ± 0.3	2.7 ± 0.4	56	68

But the perusal of data prescribed in table 1 never says that non-vegetarian diet is not conducive to higher birth weight. It has been further clarified by the data prescribed in the table 2. Merely being a non-vegetarian is not a factor that can increase the birth weight of newborn baby; rather the amount of non-vegetarian diet taken by the pregnant reflected by the frequency of taking it during the pregnancy is more important. Maximum birth weight was obtained in both rural (3.3 kg) and urban (3.2 kg) areas when it was taken on alternate day. The birth weight was lowest as 2.5 kg in rural and 1.9 kg in urban areas when it was taken on an interval of two months. The birth weight increases with the increase in frequency of non-vegetarian diet in both rural as well as urban condition. The weekly consumption of non-vegetarian diet also produced healthy babies in rural (3.0 kg) as well as urban (2.9 kg) areas. However the results of consumption of non-vegetarian food on monthly interval are not bad and babies were of more than normal weight in this group.

**Table 2:** Influence of frequency of non-vegetarian diet on child weight, n=200

Frequency	Weight of child (mean ± SD), kg		Percent consumption (%)	
	Rural	Urban	Rural	Urban
Alternate day	3.3 ± 0.3	3.2 ± 0.5	12	24
Weekly	3.0 ± 0.2	2.9 ± 0.4	12	16
Monthly	2.8 ± 0.4	2.6 ± 0.5	16	12
Bimonthly	2.5 ± 0.3	1.9 ± 0.3	16	16

It is evident from the data presented in table 3 and 4 that carbohydrate and protein food items, taken by the pregnant mothers, have direct impact on the body weight of their newborn babies. The highest child weight was obtained in both rural (3.3 kg) and urban (3.4 kg) areas when the daily consumption of carbohydrate containing food grains (wheat, rice and maize) was more than 400 g. In urban area a baby of 4 kg was also born in this group. The lowest child weight was observed in rural (2.5 kg) and urban (1.9 kg) areas when the daily intake of this food item was 300 g or less. Thus it is evident that the consumption of this amount produced under weight child. The result of 300g to 350g intake of this food item gave birth to healthy babies in rural (2.7 kg) as well as urban (2.7 kg) regions. The babies born from the mothers taking 350g to 400g of carbohydrate food were of sound health both in rural (3.0 kg) and urban (3.0 kg) areas. Maximum pregnant mothers were conscious regarding nutrition. Only 16 percent in rural and urban areas were taking less than 300g of carbohydrate diet eventually producing underweight newborn children. Maximum number (32%) of expecting mothers were taking 300g-350g carbohydrate diet in urban areas while 350-400g in rural areas (36%).

**Table 3:** Food containing carbohydrate and child weight, n=200

Carbohydrate containing food, g	Weight of child (mean ± SD), kg		Percent consumption (%)	
	Rural	Urban	Rural	Urban
≥ 400	3.3 ± 0.5	3.4 ± 0.4	32	24
350-400	3.0 ± 0.3	3.0 ± 0.6	36	28
300-350	2.7 ± 0.7	2.7 ± 0.3	16	32
≤ 300	2.5 ± 0.4	1.9 ± 0.4	16	16

The consumption of 300g and more of proteinous diet by the expecting mother gave birth to most healthy babies in rural (3.4 kg) as well as urban (3.3 kg) areas of the selected district. On the contrary the children of mothers taking less than 200g of protein containing food items were of lowest weight in both rural (2.5 kg) and urban (1.5 kg) areas of Bhagalpur. The babies of mothers taking 200-250g protein containing food items were normal in rural (2.6 kg) and urban (2.4) areas. The pregnant women taking 250-300g proteinous diet gave birth to healthy babies in rural (3.0 kg) as well as urban (3.1 kg) areas. In all the protein food consumption group babies were much healthy in rural areas in comparison to urban areas except 250-300g consumption groups. Only 8 percent in both rural and urban areas pregnant mothers took less than 200g or less proteinous diet. Maximum (40%) mothers took 250-300g protein diet in rural and urban areas of Bhagalpur district.

**Table 4:** Food containing protein and child weight, n=200

Protein containing food (gm)	Weight of child (mean ± SD), kg		Percent consumption (%)	
	Rural	Urban	Rural	Urban
≥ 300	3.4 ± 0.3	3.3 ± 0.4	28	36
250-300	3.0 ± 0.5	3.1 ± 0.7	40	40
200-250	2.6 ± 0.3	2.4 ± 0.2	24	16
≤ 200	2.5 ± 0.4	1.5 ± 0.4	8	8

Vegetables and fruits when incorporated in pregnant diet have also played a positive role in increasing the child weight. It is evident from the data presented in table 5 and 6. In this district banana was the cheapest fruit all round the year. It was more palatable for them when taken with milk. Combining with each other they form a healthy diet. It was observed that 36 percent in rural and 40 percent in urban area pregnant mothers were taking milk and banana daily which produced the highest body weight of newborn child in both rural and urban areas as 3.2 kg each. The decreasing trend in birth weight was noticed with decrease in frequency of milk consumption.

**Table 5:** Influence of fruit and milk on child weight, n=200

Consumption frequency	Weight of child (mean ± SD), kg		Percent consumption (%)	
	Rural	Urban	Rural	Urban
Daily	3.2 ± 0.8	3.2 ± 0.3	36	40
Weekly	3.0 ± 0.6	2.8 ± 0.5	40	36
Monthly	2.5 ± 0.2	2.1 ± 0.5	24	24

Vegetable consumption by the pregnant women also showed the similar trend (table 6). Daily eating of ample amount of green and leafy vegetable resulted in 3.2 kg of newborn in both rural and urban areas. When the frequency of leafy vegetable consumption was reduced to minimum, the weight of newborn was reduced. In this condition the baby was of

low birth weight (2.0 kg) in urban areas. The data of table 6 shows that at least weekly consumption of green and leafy vegetables resulted healthy newborn in rural (2.9 kg) and urban (2.7 kg) areas similarly.

**Table 6:** Influence of green leafy vegetable on child weight, n=200

Consumption frequency	Weight of child (mean $\pm$ SD), kg		Percent consumption (%)	
	Rural	Urban	Rural	Urban
Daily	3.2 $\pm$ 0.3	3.2 $\pm$ 0.6	48	48
Weekly	2.9 $\pm$ 0.5	2.7 $\pm$ 0.4	36	36
Monthly	2.5 $\pm$ 0.2	2.0 $\pm$ 0.4	16	16

#### 4. Discussion

It is general convention that non-vegetarian people takes higher nutrition. It was observed that the number of vegetarian pregnant was less in rural (44%) and urban (32 %) areas. Vegetarian pregnant gave birth to heavier child in rural (3.1 kg) and urban (3.3 kg) while non-vegetarian produced newborns of 2.8 kg in rural and 2.7 kg in urban areas. But in fact these non-vegetarians pregnant did not take proper amount of diet on proper interval. The cause may be poverty, superstition and taboos. In Hindu families there were several restrictions in preparing and taking non-vegetarian food, which may reduce the frequency of its consumption. Only 16 percent of pregnant in each rural and urban areas of the district were taking 300g or less amount of carbohydrate containing food which means that carbohydrate rich diet was their staple food. Proteinous diet was also taken in good amount by large number of respondents. Shukla (1989)<sup>[4]</sup> and Sharma (1992)<sup>[5]</sup> also says that protein is an important food item which should be taken in good quantity because its deficiency may cause anaemia in the pregnant. The present finding is also in support of Singh and Pruthi (1991)<sup>[6]</sup> as the intake of milk is increased, the health of mother was good and the birth weight was increased to 3.2 kg in both rural and urban areas. But if milk intake was at minimal level the birth weight was reduced to underweight (2.1 kg) particularly in urban area. Pregnant women were aware about the importance of green leafy vegetables and highest number of them was taking it daily (48%) while 36 percent of them were taking weekly and only 16 percent were neglecting it.

#### 5. Conclusion

When non-vegetarian diet was taken weekly or on alternate day by the expectant mothers, the birth weight of newborn was about 3 kg or more. But irregular or a long gap of more than one month may produce underweight newborn. Carbohydrate and protein containing food items have direct impact on the birth weight of newborn. When milk and banana was taken daily during pregnancy, the body weight was more than 3 kg in rural and urban areas similarly. Even its weekly consumption has the possibility of about 3 kg birth weight while at monthly interval it could not show good result and there is a chance of underweight baby. Daily consumption of leafy vegetable by the pregnant raised the birth weight to more than 3 kg while on weekly interval the birth weight was always less than 3 kg. A gap of one month was the cause of underweight in newborn.

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