

# Female facing dual burden of malnutrition : A brief study of Bhagalpur

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■ **ABSTRACT** : Currently, the city is undergoing rapid socio-economic demographic nutritional and health transition. Although Bhagalpur has not yet overcome the problems of poverty, under nutrition and communicable diseases, it is increasingly facing additional challenges related to diseases of over-nutrition that results from urbanization and economic betterment. The purpose of the study was to describe, – the nutrition transition in Bhagalpur in term of double burden of malnutrition; – to create a better picture of both extremes under nutrition (Anaemia\_ and over nutrition (related disease). Methodology : This paper conducted a study on 200 women of age belonging to 20 to 50 years because this is more venerable age. 100 women of age belonging to 20 to 50 years because this is more venerable age. 100 women from each groups were selected. To know the impact of under nutrition blood hemoglobin level was tested and assessed on who scale, for the second case to study height and weight was assessed. Result : The study finds that 51 per cent and 21 per cent in age of 20 to 30 years 25 per cent and 21 per cent were in age of 30 to 40 years and 24 per cent and 35 per cent in age of 40 to 50 years was found in the case of under nutrition and over nutrition, respectively. According to WHO threshold, it was found, 25 per cent case of moderate, 16.16 per cent severe 10 per cent border line and 9 per cent less than 6Hb/g/Dl. (Total 60 % Anemic). It was remarkable to see that only 40 per cent cases were normal. On the other half of the study we found that 44 per cent women were overweight, / Obesity. Conclusion : This study found that the town is now facing dual burden of malnutrition that clearly draw a picture of health transition.

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**M**alnutrition means an inadequacy of deficiency in quality of several essential nutrients which is good and enables a person to lead a health active life (Sukhatme, 1965) It also refers to impaired capacities of human body because of nutrients and health related inputs the essential nutrients required by human

body from food are carbohydrates, proteins, fats, vitamins and minerals (Mehta, 1982) India is undergoing nutrition transition and is facing the dual burden of malnutrition *i.e.* problem of under malnutrition and micronutrients deficiencies along with emerging problems of over nutrition and obesity ([www.pubenws.com / article / net](http://www.pubenws.com/article/net)

news) along with iron deficiency anemia (IDA) Iodine and vitamin a deficiency, India is also facing problem due to dietary deficiency of zinc, selenium, calcium and vitamin and as well as diet related – non – communicable diseases (NCDS) like diabetes, hyper tension, CHD and metabolic syndrome are also on risk. There is also a vicious cycle of maternal malnutrition, early and repeated pregnancies and low birth weight which demands attention .The Past seven decades have seen remarkable shifts in the nutritional scenario in India. Even up to the 1950's Severe forms of malnutrition were endemic. With improved house hold food security and better access to health care, clinical manifestation of severe malnutrition virtually disappeared. But the decline chronic under nutrition and 'hidden hunger' from micronutrient deficiencies was slow. On the cusp of new century, an added factor appeared on the nutritional scene in India. With steady urban migration, upward mobility out of poverty and increasingly sedentary lifestyle because of improvements in technology and transport, obesity rates began to increase, resulting in a dual burden (Gopalan, 2013). "Dual disease burden" runs in parallel with the "dual nutrition burden". The Malnutrition infection link has long been known, because poor nutritional status affects the immune system and increases vulnerability to infection. Infections and communicable diseases continue to decimate large members of people, simultaneously, non communicable, lifestyle diseases such as diabetes and coronary heart diseases are rising inexorably. Overweight exceeded under weight in well over half of the countries:les : the median ratio of overweight to under weight was 5:8 in urban and 2:1 rural areas. In more developed countries over weight among low socio-economic status women was high in both rural (38 %) and urban (51 %) settings. Even many poor countries in which under weight persists as a significant Problem had fairly high prevalence of rural over weight. (The American Journal of Clinical Nutrition. M. Ajan Nutrition org. / Content). Not surprisingly, therefore in the last decades of the twentieth Century, a new nutritional problem began to emerge in India – the problem of over nutrition and obesity and the persistent under nutrition alongside emerging over nutrition. Anemia reduces the capacity to do physical and mental work, reduces resistance to fight infection and causes increased mortality and morbidity. Anemia during pregnancy is responsible for twenty per cent of all maternal deaths. It

can cause pre-mature delivery and low birth weight of babies. In infants it can also damage the brain. Study of Mason *et al.* (2005) estimated that in India, in the year 2000 nearly seventy per cent of the non pregnant and seventy five per cent pregnant woman aged 15-49 years was anemic in terms of Iron-deficiency ([www.Academia.edn/528147doubleburden\\_ofmalnutrition.](http://www.Academia.edn/528147doubleburden_ofmalnutrition.)) The double burden of malnutrition is a phenomenon that is manifested by the coexistence of diseases and undernutrition and over nutrition in the same population (FAO, 2006). On the one hand the emergence of obesity and these non- communicable disease associate other hand, the persistence of macro nutrient deficiency (chronic oracute malnutrition) and micro nutrients ( iron, zinc, iodine and vitamin etc).

Undernutrition in macro nutrient and micronutrient are still health problems in developing countries ([www.fao.org/publication/sofa/Fr/2013](http://www.fao.org/publication/sofa/Fr/2013)). According to WHO, more than 1.4 billion people aged 20 and above in the world are over weight and over 500 million are suffering from obesity (OMS, 2013). The double burden of malnutrition is also observed at the individual level or obesity is coupled with anemia (Eckhardt *et al.*, 2008, Aanges *et al.*, 2013). On the other hand obesity is closely related to non communicable diseases like cardiovascular diseases, diabetes hypertension. In 2008, non communicable diseases are the leading cause of death of more than 36 million person in the world (OMS, 2013) These are linked to a set of changes in diets and life styles, urbanization, globalization consists in the nutrition transition (Roger and Rukk, 2012). So this research was on the topic. "Female facing dual burden of malnutrition: A brief study of Bhagalpur" was taken to assess the gravity of the double burden of malnutrition among the women aged 20-50 years was considered as a topic for the research work. Many of the low to middle even high income level females in the city are facing with an increasing prevalence of over weight/ obesity while that for deficiency in micronutrient remains high, a duality term 'double burden' both are very risk factors for the onset of chronic diseases as well as deficiencies diseases. In the view of generating data on this public health problem, the present study was conducted to determine the prevalence of dual burden of malnutrition comprising over nutrition obesity / Over Weight and under nutrition (Anemia) among women.

### Aims and objectives :

The overall objective of the study was to determine the prevalence of double burden of malnutrition at the population level (women) and not at the individual level in the city of Bhagalpur. The Specific purpose of the present study was

- To assess the effect of nutrition transition in term of malnutrition.
- To create a better picture of both extremes under nutrition (Anemia) and over nutrition (obesity).

### ■ RESEARCH METHODS

The study was conducted in the one of the economically progressive and leading town of Bihar, Bhagalpur. It is located at the eastern part of the capital of Bihar Patna and approximately 222 km from the capital. The women population is 1,86,133 and the illiteracy level 1,22,420 (Bhagalpur Census, 2011). The Study was done in the year of 2014, in which included 200 women aged 20-50 years, healthy and non-pregnant women were randomly selected, because this is considered more venerable age in the female life cycle. For the study hundred women for each group were selected. To know the impact of over nutrition anthropometric measurement were taken. Weight in kg was determined by weighing a person and size by the height board. Measuring the weight and size had allowed to calculate body mass index (weight in kg compared to height squared) thus obesity was defined on the basis of body mass Index. BMI was calculated using the formula given by Wyngaarden as cited in Srilaxmi (2002).  $BMI = \text{weight(kg)/height in mts}^2$ .

BMI	Categories
< 18.5	Under weight
18.5 to 24.9	Normal
25.0 to 29.9	Over weight
30.0 to 34.9 (30 or >)	Class I Obesity
30.0 to 39.9	Class II Obesity
40 or more than	Class III Obesity

The body mass index is a good representative of women's nutritional status. And for the another hundred female respondent anemia was determined by measuring hemoglobin through the blood count which was tested and assessed on WHO scale, the assay was performed in the laboratory tests in the city.

Scale used for assessment: classification Anemia, according to WHO Threshold (women) :

Classification	Range(Hb/gr/dl)
Normal (non-preg.)	12gr/dl
(pregnant)	11gr/dl
Boarder line	10 – 11gr/dl
Clear anaemia	9 -10gr/dl
Moderate anaemia	8 -9gr/dl
Severe anaemia	6 – 7gr/dl

The study data was analyzed according to this scale provided by WHO. And the prevalence of double burden of malnutrition on the basis of body mass index and hemoglobin level in the blood was studied in the female population of the proper town, level of education, economic condition and dietary habits were not involved in the study.

### ■ RESEARCH FINDINGS AND DISCUSSION

Double burden of malnutrition is now a major health problem in most of developing countries, which has enormous implication for the development of these countries. In this context the objective of our study was to determine the prevalence of dual burden of malnutrition of the population level in the prefecture of Bhagalpur was done. The result of study showed the prevalence of obesity and overweight among women in this region. Out of the total hundred respondents forty four per cent women were suffering from overweight or obesity. Abdominal obesity was not assessed but is was clearly visible by the researcher. The alarming rate of obesity has become a sources of health to study in this region. Further obese or overweight women were classified according to age. Twenty per cent (20 %) women falls in this age group of 20-30 years. Thirty six per cent (36 %) in the age group of thirty to forty years (30-40 years) and 44 per cent in age group of forty-fifty years, respectively. Percentage of obesity/ overweight is higher among age group of forty to fifty years as shown in. Result also found that out of forty four per cent female obese or overweight seventy five per cent female was having BMI 25.0-29.9 kg m<sup>2</sup>(Overweight), 25 per cent obese whose BMI was 30-34.9 kg/m<sup>2</sup>. It is well established that obesity and overweight are associated with the development of several chronic diseases. It is therefore seems necessary to establish averages prevention to inform women about the harmful effects

of obesity (Gangadharappa *et al.*, 2005). The study may explain the high prevalence of obesity / overweight due to changes associated with the nutrition transition is underway in Bhagalpur. Indeed the consumption of energy dense foods refined sugar and fat does not necessary lead to a quality diet (Trowbridge *et al.*, 1993 and Salutagimath and Nithya Shree, 2014) because these food are low in essential micro nutrients. A diet insufficient in bioavailable iron and blood loss are considered to be the leading causes of iron deficiency anemia (Park, 2006 Social and Preventive Medicine). The overall prevalence of iron deficiency is believed to be equal to that of anemia from all causes anemia has been used as a proxy for iron deficiency because hemoglobin is the only indicator that is measured in most of the developing countries. The technology for hemoglobin assays is available for and affordable (The rationale for selecting and standardized iron status indicator). Therefore Anemia was determined by measuring hemoglobin through the blood count. In this case anemia was defined as a hemoglobin level. Blood hemoglobin level of hundred respondents were assessed on the WHO Scale. Sixty per cent (60 %) women surveyed were suffering from iron deficiency anemia Fig. 1. Study also estimated that Anemia effected fifty one per cent women (51 %) women in the age group of twenty to thirty years (20-30) yrs. Twenty five per cent (25 %) in the age of thirty to forty years respondents and twenty four (24 %) in was the age group of forty to fifty years (40-50) years, respectively higher percentage of anemic cases was found in the age group of twenty to thirty years (20-30) as it is well known fact the prevalence of iron deficiency anemia has a positive association with the females of child bearing age and adolescent girls. Out of the sixty per cent (60 %) anemic cases surveyed. They were further classified according to WHO threshold used in the survey (Borderline, moderate, severe and less than 6Hb/q/DL) sixteen per cent (16 %) cases was falling in the group of borderline anemia whose the hemoglobin count was (10-11 gr / dl) (Fig. 2). Forty one per cent (41.66 %) was in the case of moderate anemia having hemoglobin level (8-9 gr / dl). Twenty eight per cent (28.33 %) females were in the group of severe anemia whose hemoglobin level was (6-7 gr / dl) per cent respondent were having there hemoglobin level less than 6Hb/ gram / DL. There was no case clear anemia (9 – 10 gr / dl). Fig. 3 good nutrition plays a crucial role in maintaining the health this study highlights the clear picture

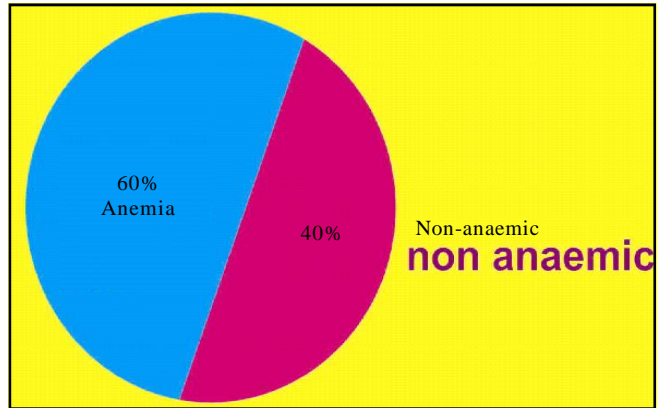


Fig. 1 : Percentage of anaemic cases

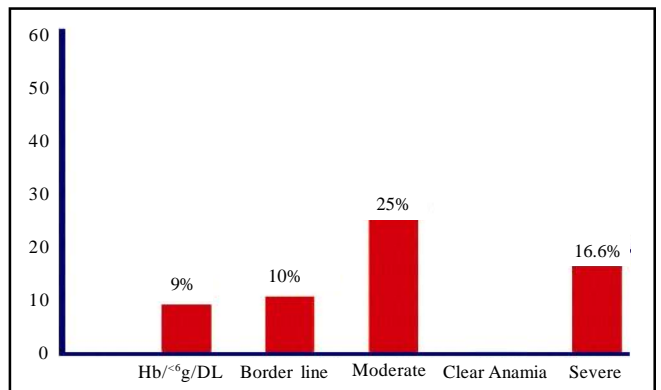


Fig. 2 : Classification fo anaemic according to range

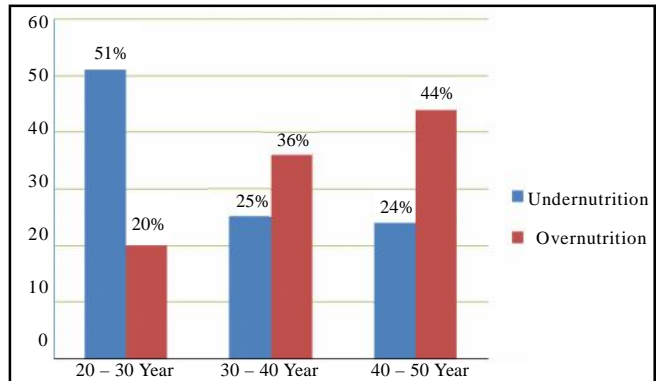


Fig. 3 : Showing double burden of malnutrition

of dual burden malnutrition. Furthermore frequent consumption of fruits and vegetables may control the severity since they are important source of fibres which prevents over weight and obesity and also the main source of micronutrients, they have a protective effect on under nutrition. studies carried out by researchers around the world have recorded this association (Kapil *et al.*, 2002).

**Conclusion :**

Dual burden of malnutrition both overweight / obesity and anemia are prevalent and co- existing among the females of Bhagalpur in Bihar. This appears to be the result of their incorrect life style practices. This study emphasize the need for implementation of educational programmes to improve the nutritional knowledge and awareness of women and health care workers to help women to achieve their ideal weight and healthy life.

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