

# PROTEIN NUTRITIONAL STATUS IN ASSAMESE WOMEN

## (A Preliminary Study)

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### SUMMARY

Serum protein levels have been determined in 20 non-pregnant, 52 normal pregnant and 28 pregnant oedematous cases in the reproductive age group of Assamese population. Compared to non-pregnant, fall in the serum protein was noticed in normal pregnancy and pregnancy oedema cases. However, normal serum protein concentrations were found in some of the oedema cases.

Socio-economic condition as well as parity has significant influence on serum protein level.

### Introduction

It has long been recognised that women in childbearing period suffer from lack of nutrition. Nutritional status of an individual depends mostly on dietary habits and socio-economic condition. Plasma protein of an individual is dependant on dietary habits as they are derived from amino acids of the dietary protein.

Since plasma protein level reflects the protein nutritional status of an individual, the present study was conducted with the aim to find out the protein nutritional status of Assamese women in the reproductive age group belonging to different socio-economic status.

### Materials and Methods

This study was conducted in 100 Assamese women who attended Gauhati Medical College Hospital during the period from August, 1984 to November, 1984 which included both outdoor and indoor patients. As Gauhati Medical College Hospital serves as a main referral hospital where patients come from different parts of Assam it can be reasonably assumed that it represents the Assamese society mostly of middle and low socio economic status. Patients under study are divided into three groups :

Group-I : Normal non-pregnant healthy women serve as control — 20 cases.

Group-II : Normal pregnant women between 28 to 40 weeks of pregnancy — 52 cases.

Group-III : Pregnant women with oedema between 28 to 40 weeks of pregnancy—28 cases.

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In all the cases a detailed clinical history including husbands occupation, number of dependants, age, parity and dietary habits specially protein intakes and associated gastric and intestinal diseases were noted. Systemic examination and routine investigations like haemoglobin estimation, examination of urine and stool were done.

TABLE II

*Mean Serum Protein Value and Haemoglobin Concentration in Different Groups*

Group	Mean concentration of serum protein gms%	Mean concentration of haemoglobin gms%
Group-I	7.76	10.22
Group-II	7.56	9.13
Group-III	6.12	8.47

*Collection of Materials*

2 c.c. of venous blood were collected from antecubital vein and then centrifuged. The serum was separated and serum protein was estimated by the Biuret method.

Group-III in Table-II shows significant lowering of haemoglobin concentration.

An attempt was made to find out the influence of age, parity and socio-economic status on serum protein level (Table III).

*Results and Observation*

In the present study the range and overall mean value of serum protein of all the 3 groups are shown in Table-I.

Table III shows that age has no influence on the plasma protein level in all the groups.

In Table-IV total serum protein level decreases with the increase in parity.

TABLE I

Group	Range of serum protein gms%	Mean concentration of serum protein gms%	Standard deviation (±)	Standard error (±)
Group-I	6.2-8.0	7.76	0.79	0.18
Group-II	5.2-7.8	7.56	0.81	0.22
Group-III	3.7-7.6	6.12	0.45	0.12

The mean serum protein value in Group II and Group III is less than the control group.

Out of the 100 patients only 2 were in the high socio-economic status. So, their serum protein values were not taken into account.

In Table-II, the mean value of serum protein of each group is compared with the corresponding mean value of haemoglobin.

The serum protein level was found to be less in all the three groups in low socio-economic condition.

TABLE III

Total Protein Groups in Different Age Groups

Groups	Mean concentration of total protein gms% 16-20 years	Mean concentration of total protein gms% 21-30 years	Mean concentration of total protein gms% 31 and above
Group-I	7.5	7.9	7.8
Group-II	7.7	7.6	7.3
Group-III	6.1	6.3	6.0

TABLE IV

Mean Level of Serum Proteins in Group—II and Group—III of Various Parity

Group	Primi	P <sub>1</sub> -P <sub>4</sub>	P <sub>5</sub> and above
Group-II	7.8 gm%	7.2 gm%	6.5 gm%
Group-III	6.8 gm%	6.1 gm%	5.4 gm%

### Discussion

Our observation shows that mean serum protein level in normal non-pregnant women and normal pregnant women were 7.76 Gm% and 7.56 Gm% respectively. These results can be favourably compared with Samson Wright's (1965) and Raghav *et al* (1982). The plasma protein level in our series were found to be slightly on the higher side (7.56 Gm%) than (6.46 Gm% and 5.20-7.12 Gm%) as reported by Mudaliar and Menon (1965) and Kishore and Gupta (1965), respectively.

This may be attributed to the method of estimation as well as the dietary habits of Assamese women as all of the women in the study group were non-vegetarian consuming varying amount of protein in their diet.

More significant however was the observation that there was progressive decrease of serum protein level in normal pregnancy and

pregnancy odema cases. These findings support the results of Agarwal (1965) and Raghav *et al* (1982). The decrease in serum protein level may be attributed partly to the hydraemia occurring during pregnancy and partly due to positive nitrogen balance (Seegars, 1937). Water retention causing oedema may be due to reduction in plasma protein level which reduces the osmotic pressure exerted by blood and allows fluid to accumulate in the tissue spaces. The mean haemoglobin level was significantly decreased with the decrease in serum protein level. It may be concluded that hypoproteinaemia and anaemia coexist together as protein is one of the essential component in the synthesis of globulin fraction of haemoglobin. Anaemia can cause oedema by lowering the osmotic tension of blood.

It was interesting to find out that with increase in parity the serum protein level decreases in normal pregnancy odema cases. This may be due to more utilisation of protein for the wear and tear of tissues during pregnancy, child birth and lactation and low intake of protein as majority of high parity patients belong to low income group.

In pregnancy odema cases the range of serum protein was 3.7 to 7.6 Gm%. This shows that some of the pregnancy odema

TABLE V  
The Influence of Socio-economic Status in Serum Proteins

Group	Low socio-economic group				Middle socio-economic group					
	No. of cases	Range of serum protein Gm%	Mean value of serum protein Gm%	Std. deviation (±)	Std. error (±)	No. of cases	Range of serum protein Gm%	Mean serum protein Gm%	Std. deviation (±)	Std. error (±)
Group-I	12	6.0-7.77	7.5	1.2	0.3	8	6.2-8.0	7.8	0.62	0.11
Group-II	21	5.2-7.4	7.1	1.5	0.33	30	6.8-7.8	7.5	0.81	0.25
Group-III	13	3.7-6.8	5.9	1.05	0.28	14	5.4-7.6	6.51	0.47	0.13

cases do have normal serum protein level. Similar remark was made by Bell, *et al* (1963). It was formerly believed that famine oedema was caused by hypoproteinaemia due to insufficient intake of protein, but the results obtained during world war II show that famine oedema is not necessarily accompanied by hypoproteinaemia nor does hypoproteinaemia necessarily result in oedema.

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